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Mott's Railroad Wheels.

The accompanying figures are views of an improvement on Railroad Wheels, for which a patent was granted to Jordan L. Mott, of this city, on the 21st of last March (1854). Figure 1 is a perspective view, and figure 2 is a section of two wheels on their axle, taken in the plane of their axis.

The nature of the invention consists in making railroad wheels with the outer face of any suitable form, and with the central hub fitted to the axle, in combination with the making of the inner plate of a conical or nearly conical form, and with the extremity thereof fitted to the axle towards the middle of its length. The outer plate gives the required vertical support whilst the inner conical plate braces it against all lateral thrusts, thus presenting greater strength with a given weight of metal than by any other mode of construction heretofore practiced. The rim of the wheel, having its support on the axle toward the middle of its length, by the bracing action of the inner conical plate, will be better stayed to resist lateral thrusts, and this point of support being removed to a greater distance from the plane of the flange, will reduce, if not entirely avoid the breaking or bending of the axle, while at the same time one or both of the wheels can be fitted to the axle so as to turn independently to run on curves, the two points of support on each wheel on the axle being so far apart as effectually to resist the lateral thrusts.

a represents the solid axles with two wheels thereon. Each wheel is composed of a hub, *b*, fitted to the axle near the outer journal, and either fixed or free to turn thereon; a plate, *c*, or spokes, or other equivalents therefor, and connecting the hub with the rim, *d*, and an inner plate, *e*, of a conical or nearly conical form, extends from the inner or flange side of the wheel to the shaft to which it is fitted, either to be secured or to turn thereon. If desired, and to facilitate the casting of such wheels, the outer plate is made slightly curved from the hub to the rim, as also the inner or conical plate. The inside is cast on a core of the required form, supported in the usual or any suitable manner, and, if desired, the securing nut, *f*, previously made of wrought iron and tapped, is inserted in the sand core, by which it is protected from the molten iron in the process of casting, so that after casting it can be liberated from the sand. Or, instead of this, the nut can be introduced through holes in the outer plate.

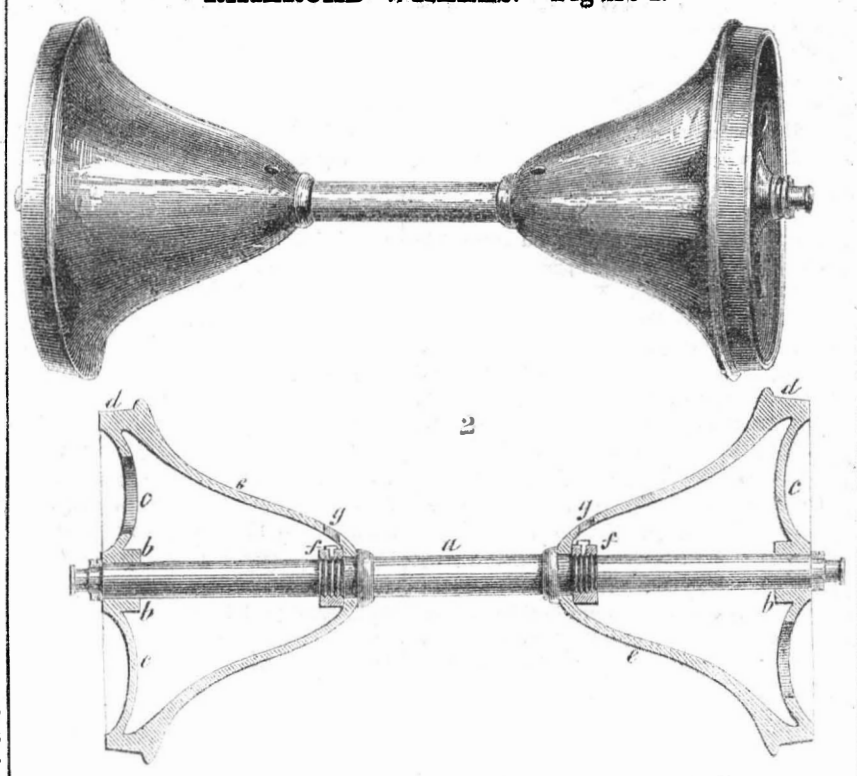
The axle may be made of greater diameter between the two wheels, or with collars, leaving two shoulders for the inner ends of the cones of the two wheels to rest against, and at the required distance from the shoulders the axle is tapped to receive the nuts. When the axle is inserted in the wheel the nuts are slipped thereon and then screwed up against the inner face of what may be termed the hub of the conical plate. Or instead of the securing nut, a washer can be substituted and secured to the axle by a key or screw inserted through the hole, *g*, in the conical plate.

In this way both wheels can be secured on the axle so as not to turn thereon, or one may be so secured and the other held in its place on the axle, and be left free to turn on the axle, so that in turning curves one wheel may act independently of the other, or both may be secured on the axles so as to revolve thereon.

As cast-iron railroad car wheels have heretofore been made and mounted on their axles, the semi-diameter of the hub is much greater than the length of it, so that when the flange strikes against the rail in the lateral thrusts of railroad trains, the tendency of the force to break or bend the wheels and axles, is much increased by reason of the leverage of the greater diameter of the wheels over the length of the hubs. This new method of constructing railroad wheels is designed to remove this evil.

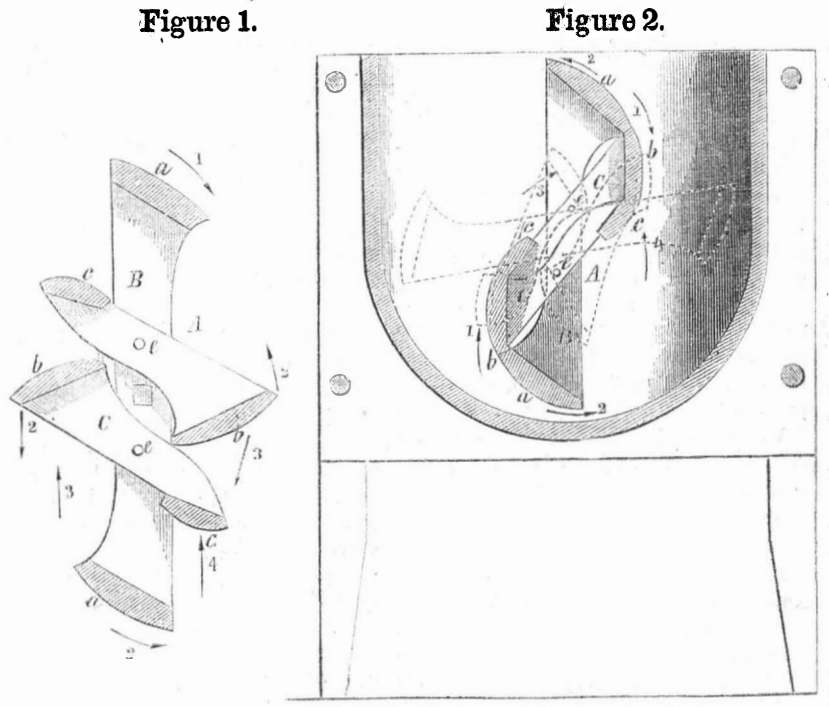
More information may be obtained by letter (or otherwise) addressed to Mr. Mott, at Mott Haven, N. Y., or to No. 264 Water street, this city.

RAILROAD WHEELS.---Figure 1.



ADJUSTABLE CHURN AND BUTTER WORKER.

Figure 1. Figure 2.



The annexed engravings represent the improved Churn and Butter Worker, of Robert W. & D. Davis, of Rodgersville, N. Y., for which a patent was granted on the 28th of last February (1854.)

Figure 1 is a vertical transverse section of the dasher adjusted for agitating the milk or cream, and figure 2 is a vertical transverse section of the churn, showing the dasher in the dotted lines for working the milk or cream to produce butter, and in black lines as adjusted for working the butter after it has been obtained. The same letters refer to like parts.

Messrs. Davis are the inventors of the "self-adjusting churn" patented April 2nd, 1850, an exact copy of which received one of the highest prizes at the World's Fair in London, also various prizes at our own Agricultural Fairs. This adjustable churn and butter worker is entirely different from the "adjustable churn," in its construction and operation.

The nature of this invention consists in so constructing the dasher that it may be adjusted by the resistance of the cream in revolving through it, so as to present six centripetal cutting or agitating blades to the cream, and then after the butter is produced, to be adjusted so as to present but two centrifugal gathering blades, which gather the butter, work it into rolls, and expel the buttermilk therefrom in the most perfect manner.

A represents the dasher, it is composed of six blades or agitators, those lettered *a a*, being secured fast on the main end pieces, B, which support the other parts of the dash. These blades revolve with the end pieces, B B, which are hung on the short journals, or axes, *d d*. The other blades, lettered *b b* and *c c*, are secured fast on the divided end pieces, C C, in the manner shown in the engraving, said pieces being placed diagonally to the pieces, B B, and each of their sections are hung loosely on pins, *e e*, which are set eccentric to the axis of the dasher. The blades, *b c*, are so hung and bear such relation to each other, as shown plainly in the engraving, that one operates upon the other or upon the end pieces upon which it is hung, when the dasher is turned in the direction of the arrow, 2, and the cream strikes it as indicated by the arrow, 3, which end pieces, as they are operated upon, cause each blade to separate from the other, or all of them to change their position at one time, and occupy the position shown in dotted lines in figure 2. When the blades occupy this position they serve effectually for agitating and throwing the cream towards the center of the churn, until it is converted into butter. By dividing the end pieces, C C, diagonally in the line of a cima reversa, the edges of the blades are always brought in contact with them, and cause them to open or to close together. The blades all close at once when the dasher is turned in the direction of the arrow, 1, and the butter strikes them as indicated by the arrow, 4. When they are thus closed they serve effectually for gathering the butter, working it into rolls, and expelling the buttermilk therefrom. The blades are set at different angles, consequently they all strike the cream at different points as they revolve, and agitate it more thoroughly. The blades, *c c*, have a greater curvature given them in line of a scroll, than those *b b*; this increased curvature commences from the termination of the curve of the blades, *b b*, and prevents the dasher throwing the butter towards the center of the churn while gathering and working it, which cannot be effected so perfectly in other churns, there being no chance for the edges of the blades, *c c*, to take hold of the butter, and carry it round, while gathering and working it into a roll.

All communications addressed to R. W. Davis, Dundee, Yates Co., N. Y., or to David Davis, Rodgersville, Steuben Co., N. Y., will receive prompt attention.

Writing on the Wrappers of Newspapers.

It is decided by the proper officers of the Post Office Department, that letter postage is legally chargeable on packages having writing, other than the simple address, on the outside. If payment is refused, the party sending it can not be prosecuted for a fraud on the department, as an attempt to conceal the writing is necessary to constitute a fraud, as in the case of writing words or signs inside of a package of printed matter, which is a fraud under the law.

Bridge over the St. Lawrence.

Preparations are now making to erect a bridge over the St. Lawrence, at Montreal.—It is to be two miles in length, resting on twenty-three piers and two abutments, giving twenty-four arches, each of 240 feet span. Advantage was taken of the solid ice to bore holes in the rocks in a line with the centers of the piers, into which huge chains will be anchored with buoys attached, so as to facilitate the construction of the coffer dams in which the masonry of the piers is to be built.

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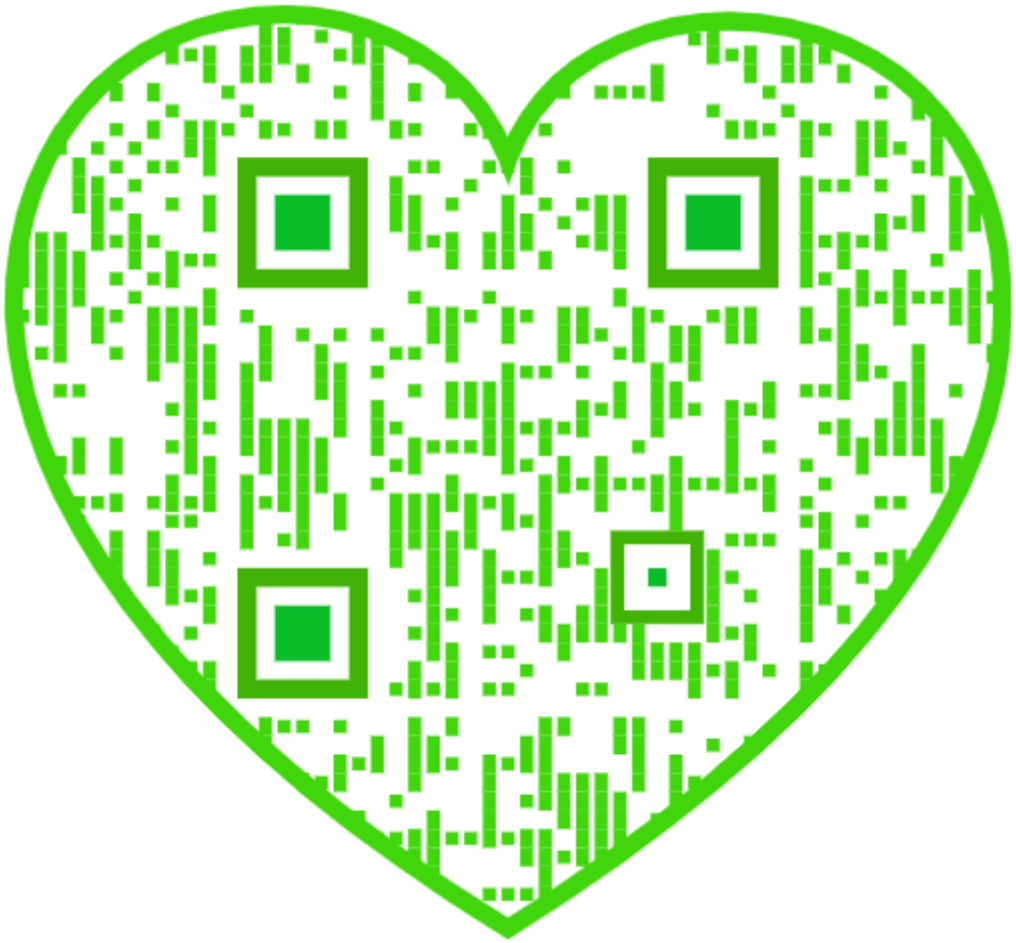

Flax Industry---No. 3.

All vegetable fibrous materials are divided into three great classes. *Cortical fibers* of which flax and hemp are the type, derived from the bark of the stems of their respective plants; *Foliaceous fibers*, of which the "Sisal" and "Manilla Hemp," are the types, as well as the "New Zealand Flax," are obtained from the leaves and not the stalks of the stems of their several plants; hence the generic term foliaceous fibers. And thirdly, as cotton is obtained from a pod or capsule, the generic term *Capsular fibers* embraces the different varieties of cotton, and all fibers produced in like manner.

All flowering plants are divided by botanists in two great classes, called *Monocotyledons* and *Dicotyledons*, from the peculiar character of their seeds; or *Endogens* and *Exogens* from the peculiar character of their stems. The stems of all *Endogenous* plants are properly stalks, and receive their growth by increments of matter deposited from within. The stems of all *Exogenous* plants are properly trunks conical and branched; and such trunks increase by the deposition of woody matter on the outer surface. A section of a stalk exhibits a homogenous surface of porous materials, softest at the center, hardest at the circumference and *without bark*. If there is any appearance of a proper bark it is caused by the united bases of the adherent leaves, as will be seen in the palm and palmetto. A *section* of a *trunk* exhibits concentric circles of bark and wood, hardest at the center and softest at the circumference, and with medulary rays from the central pith to the young external wood. Hence plants of the first class may be at once known by the absence of *bark* from their *stalks*; and plants of the second class are always recognized by the presence of bark on their trunks.

All foliaceous fibers are derived from the leaves of Endogenous plants. All cortical fibers are the product of the bark of Exogenous plants.

In Endogenous plants the leaves have nearly parallel veins, and are generally adherents to the stalk. As examples we have the Indian corn, Spanish Bayonet or Yucca, Lily, Common Flax, Palmetto, Agave, Pine Apple, &c., &c.

In Exogenous plants the leaves have mostly branching and reticulating veins, always articulated with the stem, and hence spontaneously falling. As examples we have our ordinary forest trees, and the hemp and flax plants.

The Endogenous plants differ in their geographical distribution from the Exogenous plants, as well as in their botanical structure and mode of growth. In the Equinoctial regions, the Endogenous plants form about seventeen per cent. of all flowering plants. In the variable zone, between 36° and 52°, about twenty-five per cent.; and towards the polar circles, about thirty-three per cent. The most important substances which they produce are, *farinaceous* and *saccharine* materials and *foliaceous fibers*. The smaller grasses which yield wheat, barley, millet, &c., in terminal heads of grain; the large grass which yields maize in lateral ears of corn, and the still larger grass which yields sugar in the juice of its stalk or cane, are all well known to the world, but those Endogenous plants, whose green living leaves yield valuable foliaceous fibers, are comparatively little known, even to the scientific world.

It may not be improper in this connection to pay a tribute of respect to the memory of one of those unsuccessful but remarkable men, whose fortune and the best portion of his life were devoted to the enterprise of securing and developing in the United States that which must ultimately be productive of great agricultural and commercial wealth to the whole country. We allude to the late Henry Perrine.

This gentleman was formerly the United States Consul at Campeachy, and during a long residence in that country and in Mexico, became impressed with the immense value of the products yielded almost spontaneously by the various species of fibrous endogenous plants. In 1838 he presented a memorial to Congress, showing that the *Agave Sisalana* the *Bromelia Pita*, the plants yielding the so-called "Sisal Hemp," the *Musa textalis and abaca*, yielding the "Manilla Hemp," and the plants of the pineapple-fiber yielding the "grass cloth fiber," with others of a similar character, were all susceptible of introduction, acclimation, and cultivation in various portions of our southern country. He further showed that the lands best adapted to these plants, were those which were regarded as exhausted and sterile, and that after the labor of introduction, but comparatively little care or attention was required for their successful cultivation.

This memorial was accompanied with a petition, asking for a grant of a township of land in the southern extremity of East Florida, south of the twenty-sixth degree of north latitude, upon which a nursery of the fiber yielding endogenous plants might be established.

The Committee on Agriculture, to whom the petition was referred, were favorably impressed, and reported a bill granting the request of the petitioner, on the condition that the land so granted should be occupied and successfully cultivated for the desired purposes within a certain limited period. The bill was accompanied by reports both from the Senate and House, which embraced a large amount of information on the whole subject, and which is in fact, even up to the present time, almost the only American publications to which any reference for information can be made.

The township of land having been obtained, Dr. Perrine earnestly devoted himself to the prosecution of the work. The various plants were imported at great expense from Central America and the West India Islands, and soon the nursery or plantation was in a forward and flattering condition. Dr. Perrine did not, however, confine himself to the introduction of the fiber-yielding plants alone, but introduced in addition the pimento, the cochineal cactus, the cassave, the ginger, the banana, the sarsaparilla, and various other well-known tropical and semi-tropical vegetables and plants. His idea and purpose seems to have been that, gradually these exotics would become acclimated, and become extended throughout the whole south, in the same manner that the cotton plant, sugar cane, and indigo had been in years previous.

Unfortunately, however, at the very time when the noble undertaking seemed to give the greatest promise of success, the Florida war broke out, and the plantation, situated in the heart of the then Indian country, was necessarily deserted. Dr. Perrine was forced to fly for his life, and abandon everything. Returning subsequently to watch the progress of his plants, he was surprised by the Indians and massacred, and from that time the undertaking was abandoned. Many of the plants, especially the *Agave Sisalana* have remained, become acclimated, and spread over a considerable extent of country. Specimens found in the vicinity have been brought to the north within a recent period, which furnished an uninterrupted and continuous length of fiber, superior in every respect to the best manilla hemp, of upwards of ten feet. There can moreover be no doubt that this enterprise might still be successful, and had it not been for his untimely death, would have probably been carried out by its originator.

With these brief remarks we shall now leave for the present the subject of the Endogenous fibers, and in our next return to the consideration of the *Linum Usitatissimum.*

Cause of Explosions.

In the "Scientific American" of the 8th April, there is an account of the explosion of the steamer "Reindeer" at the first turn of her wheels, &c., there is also in the "Scientific American," of the 24th of September last the criticism of an engineer upon Lieut. Hunt's theory, published by you in the No. for the 3rd of September previous. My idea of the cause of explosions in the main are the same as those of your engineering correspondent, and so must any practical man's. Upon that basis I wish to demonstrate the cause of the explosion referred to, and all similar negligences. When water is below the flues or tubes as the case may be, and the engine stationary, the pressure of steam keeps the water solid and below the flues, but upon the instant action of the engine, the pressure is released, and the water flows over the exposed surfaces of the flues, and the awful results of an explosion follow, so that you perceive explosions can and do take place without any action upon the part of either the force pump or the "doctor," for it is not a general thing for an engineer to put on his water until he has got under weigh, attended to his fires, &c.

ONE OF THE FRATERNITY.

Washington, April 23rd, 1854.

[For the Scientific American.]

Explosion of Boilers—Inspectors, &c.

Being a constant reader of the "Scientific American," I have been much instructed, and often amused, by the remarks you have made, and the ideas put forth by your correspondents, particularly in relation to the late steamboat law, passed August 30th, 1852.

In No. 30, April 8, you have a well-considered Editorial on "steamboat disasters," in which you attribute a large share of those late accidents in the West, to the Inspectors, and "call upon the Government to appoint a commission to investigate their conduct," to which I say *yes*, let the commission be issued at once, as due to the relatives and friends of the lost and wounded; to the community at large, and to the Inspectors themselves. Such a commission must result in good, by comparing the results of practice, as seen and observed by our practical Engineers and Mechanics, with the rules and data laid down by Theorists—as determined by experiments and this collection of valuable information that cannot otherwise be obtained; all of which are highly important and essential to the adoption of laws, rules and regulations, to guide the Mechanic and Engineer having in charge so dangerous an element as steam has proven itself to be. As one of the Inspectors at this place, I feel called upon to unite with you in your call for a commission of investigation, and doubt not but all other Inspectors have no objection to it.

In your last number, April 15, you again allude to the subject, and quote largely from an article in the St. Louis "Intelligencer," which is based on the testimony taken before Commissioner B. F. Hickman, in the investigation into the causes which led to the explosion of the steamer "Kate Kearney." There is only one point in the report alluded to that I wish to call your attention to and that of your readers, viz.: "It was proved that the 'Kearney' boilers bore, some months ago, a pressure by this test (Hydrostatic), of 190 pounds to the inch, 100 being her working limit by law."—This is a mistake certainly, so far as the limit of pressure to 110 pounds is concerned, for Mr. McCord, the Inspector, states that she was allowed 155 pounds, based upon the test of 190. Now the article from the "Intelligencer," and upon which you base some reflections as to the value of the hydraulic pump, places the Inspectors in a wrong position, and thus gives an opportunity to condemn the pump, as an auxiliary to prevent explosions; and requires an explanation as to the authority in this late law for the Inspectors to depart from 110 pounds per inch, as the maximum working pressure allowed, on a 42 inch diam. boiler and made of iron ¼ inch thick. The law referred to, 3rd clause, section 9, says that the maximum working pressure allowed on all boilers hereafter built, shall be 110 pounds to the inch, based upon a hydrostatic test of 165 lbs.—or 50 per cent above the working pressure, and thus provides, "that with boilers heretofore made, the Inspectors may depart from these rules, etc., but in no case shall the working pressure allowed, exceed the hydrostatic test." The Board of Supervising Inspectors, at their meeting, gave no construction to this "proviso," as to the amount of pressure to be allowed on boilers heretofore made, but instructed the Inspectors "to put the test at least 15 per cent above the amount of pressure allowed." The Local Inspectors have generally adopted 160 pounds as the maximum working pressure on boilers heretofore built; it is in this the evil lies, and not in the pump, or the incompetency of the Inspectors, as producing these deplorable accidents. But the Inspectors could not well do otherwise than to allow this amount of steam, say 160 lbs., for nearly all our Western boats were in the habit of carrying that pressure, and some as high as 200 lbs., for upon such calculations of pressure were the boilers and cylinders proportioned, at the time this law went into operation. Hence the Inspectors were compelled to depart from the 110 lbs. rule, in order to avoid the loss and total destruction of very many valuable boats, and in doing so, fixed a limit beyond which the engineers should not go, and often below what had been previously carried. The hydraulic pump has detected defects in boilers and flues in several instances. In one case at St. Louis, the shell of the boiler gave way at a pressure of 190 lbs.; in another at Cincinnati, the flue of a boiler 13½ inches diameter, 3-16 inch thick, collapsed at a pressure of 170 lbs. Who can say, but in these two cases the terrible consequences resulting from these disasters have not been averted? Because explosions of boilers and collapses of flues have taken place where the test has been applied, this is no argument against the hydraulic pump—imperfect as it is; for it is very easy to destroy the tenacity of the iron in the shell of the boiler, and the circle of flues of boilers, in one trip of the boat, after the test has been applied, in which, if it were possible for the Inspectors to be informed of such a state of things, and which has no doubt often occurred, the Hydrostatic pump would certainly detect it, particularly the defect in the flue.

But I am glad you have called attention to this pump, and drawn the attention of our engineers to the distinction between pressure slowly and gradually increased, and the sudden generation of it,—applied either to steam pressure or hydraulics. The pump is deficient in this respect; still it has the power, if our boilers and joints could only be made tight; as it is, the leak, is in most instances equal to the capacity of the pump. These remarks have been extended beyond what I anticipated at the beginning; but the subject is interesting, and there are so many points involved in any discussion, relating to explosions, that it is impossible to do justice to any particular requirement of this law without connecting others.—Thus it is, that in your remarks about the pump, you allude to a sudden power, in the generation of steam from "static to dynamic pressure," as a cause of explosions, which involves some other requirements of this law, such as the fusible alloy and the capacity of the engineer. That this sudden decrease of steam pressure takes place, and is produced by the opening of a valve, has been practically demonstrated; and that it is the last act in the drama preceding the explosion, is equally clear; the amount of power depends upon the amount of water thus suddenly converted into steam, and the space in which it is confined. The question now arises, how far does this sudden increase of power affect the temperature of the boiler and its contents, water and steam, and can the fusible alloy be so compounded, and used, as to meet this immediate difficulty, depending as it does upon temperature for its action—so as to prevent an explosion? Upon these points, we of the West would like to have your opinions, with a view to a better understanding of the causes of explosions, and to further legislation. Yours, W. W. GUTHRIE.

Cincinnati, April 23.

Growing Cucumbers.

The following from an exchange we have tried and proved:—Take a large barrel, or hogshead; saw it in two in the middle, and bury each half in the ground even with the top. Then take a small keg and bore a small hole in the bottom; place the keg in the center of the barrel, the top even with the ground, and fill in the barrel around the keg with rich earth, suitable for the growth of cucumbers.—Plant your seed midway between the edges of the barrel and the keg, and make a kind of arbor a foot or two high for the vines to run on. When the ground becomes dry, pour water in the keg in the evening—it will pass out at the bottom of the keg into the barrel and rise up to the roots of the vines, and keep them moist and green. Cucumbers cultivated in this way will grow to a great size, as they are made independent both of drought and wet weather. In wet weather the barrel can be covered, and in dry the ground can be kept moist by pouring water in the keg.

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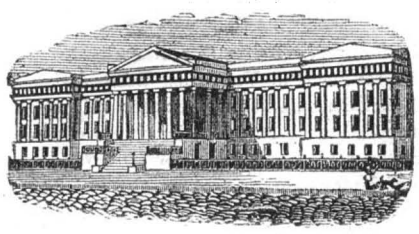

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 25, 1854.

REVOLVING FIRE ARMS—Josiah Ells, of Pittsburg, Pa.: I claim the extension. on the fore part of the rotating chambered breech for a prevention of the fouling of the spindle by the smoke in firing, and also as a means of connecting and locking the breech with the barrel, as set forth.

The connecting and locking the barrel and breech to the lock by means of a bracket and spring extending in front of the lock plate, as described.

I disclaim originality in the combining of a rotating chambered breech with a barrel and lock only in the particular manner set forth Neither do I use what is coiled, the recoiled shield as such, the collar upon the extension, substantially, or preventing the actual recoil of the breech.

I also disclaim originality in the use of the vibrating tooth and the spring in the hammer.

DISTILLING AND CONDENSING APPARATUS—J. R. Stafford, of Brooklyn, N. Y.: I claim the employment, for the purpose of separating the more and less volatile products of distillation, of a vessel which has an opening for the escape or withdrawal of condensed matters and another opening, for the escape of the more volatile matters, and which has its temperature regulated by the admission of steam or air through a pipe passing through its interior or through a chamber surrounding it, as set forth.

[We think this is a very excellent improvement for the purpose named.]

VINOUS FERMENTING IN CLOSE VESSEL—A. Harvey & C. Guild, of Cincinnati, Ohio: We claim, first, the application of pumps or of exhausters and blowers or other equivalent apparatus, to draw the gas from one fermenting vat, and force it into the fermenting liquid in another or the same vat, as described.

Secondly, the arrangement of apparatus whereby a return current is created, and the circulation of the gases caused, that is to say, the return pipe and pump or mechanism equivalent, as set forth.

Thirdly, the check valves, the disseminating pipes for the purpose of preventing any contrary passage of the liquid from vat to vat, from that which is intended, in combination with the turn-off cocks for the purpose of isolating a portion of the vats and shortening the circuit when desired, and the whole in combination with the pumps or valved pistons, for the acceleration of the circulation, and by this means equalizing its action and removing the danger of bursting the vats.

Fourth, the pipe having two discharge nozzles at different hights of the liquid of the condensing vat and cocks in the upper nozzle, in order to regulate the amount of vent or discharge.

DITCHING PLOW—J. C. Tiffany, of Coxsackie, N. Y.: I claim, first, one or more adjustable coulters or cutters, in combination with a permanent coulter, with one or more adjustable elevators, with a mold board or mold boards attached, as described.

I do not claim any of the parts or devices enumerated, separately or alone, but in combination and in combination only.

Second, I claim the flexible adjustable spreader for moving the earth from or returning it to the ditch as required, as described.

Third, I claim the flexible adjustable spreader in combination with the plow, as set forth.

Fourth, I claim the devices, substantially as described, or their equivalents, for changing the position of the rear end of the beam, in combination with the angular slot, and curved plate, as described.

CAST-IRON CAR WHEELS—Geo. W. Glass, of Allegheny, Pa.: What I claim is not the corrugating the disk of cast-iron car wheels to render them susceptible of contraction and expansion. Nor yet do I claim the making of car wheels with a space between the inner and outer disks or sides, as both these devices are well known. Nor do I claim the use of core holes in casting car wheels.

The constructing of cast-iron car wheels of the shape and conformation described, being wheels with two disks united at the rim and tread, and at the hub, by a semicircular or semi-elliptical arch, the greatest external curvature of the inner disk being immediately under the flange and below the point of contact of the flange and tread, for the better supporting the flange and tread in combination with the braces of the construction and shapes shown.

TRAVELING BRIDGES—Frederick Field, of Adrian, Mich. I do not claim a retractile draw bridge, nor any of the appliances by which such bridges are moved. I wish to distinguish my bridge from all others, and claim it as such, that it acts as a carriage as well as bridge, receiving its load upon it while resting on the abutments or one side of the span or spans to be crossed, carries the load over, and rests upon the other side to receive its return load, and so back and forth, leaving the spaces between the piers open for vessels, &c.

RAILROAD CAR SEATS.—Wm. E. Milligan, of New York City: I do not claim the device of making reversible seats in which the back turns down to form the seat, and vice versa, such having been used before, but I claim supporting the angle of the seat and back upon ways or in any equivalent manner, whereby it is transferred from one side of the chair frame to the other in making the reversal, as described.

SECURING STONES IN FOUNDATIONS—J. P. Avery, of Stonington, Ct.: I do not claim the use of dowel joggles of double dovetail form for uniting stone together, as such have before been used; nor yet do I claim making tight the vertical joints and binding the two courses together by a dowel or key driven through the stone in the top course and into or between the stones in the under course, as such has before been done by wedges let into the ends of the dowel, and serving to spread it to make tight the joints in and between the courses.

But I claim the combination and arrangement specified, of the dovetails, and tightening key, or its equivalent, when the said dovetails are constructed of taper flange form, fitting within or under projecting lips to the dovetail recesses in the stones, to draw and clamp the two courses together, the said dovetails fitting within the one stone of the one course and the two stones of another course, and being driven home by the intervening key to make tight the vertical and horizontal joints in the two courses and to clamp the two courses together firmly and permanently, as specified.

[See notice of this invention on page 236 volume 8.]

FILE OR BILL HOLDER—T. W. Brown, of Boston, Mass. I am aware that spring bands have been applied to the two boards of a bill or file holder, so as to draw them towards one another, and upon papers interposed between them, and to admit of their being moved apart from one another, such band having generally been made in whole or in part of india rubber, I therefore do not claim the application of spring bands to the boards.

But I claim the arrangement or application of the circular grooved annulus, a spiral spring, and the cords together and with respect to the two boards, so as to operate as specified.

FIRE ARMS—Charles Buss, of Marlboro', N. H.: I claim making the trigger guard so that it shall not only perform the function of a guard to the trigger, but that of a spring to press the straddler or index holder against the catch wheel, as specified.

ROTARY PUMP—Reuben Burdine, of Washington City, D. C.: I claim the combination of the screw or screws upon the rotary shaft, with the radial curved wings or drivers (although I do not confine myself to the curved form, as straight ones may be used) the whole contained within a case or drum for receiving and directing the water intended to be elevated, as set forth.

MACHINERY FOR LAYING ROPE—S. & J. A. Bazin, of Canton, Mass: We claim adapting the machinery for forming both hard and soft cordage by means of the ring, so actuated by the circular plate, and its rollers made to revolve or held stationary, as set forth, so as to form an extra twist in the rope when desirable, by giving an additional revolution to the bobbin frames. as described.

We also claim an improvement in the movable crane which consists in forming it of a bent shape with the right angular hinged arm operating as described, so as to feed the rope in a direction parallel with the axis of the winding reel.

We also claim stretching the rope after it is laid, by means of the double pulley, with grooves of different diameter, as set forth.

FEEDING SHEETS OF PAPER TO PRINTING PRESSES—Henry Clarke, of New Orleans, La.: I do not confine myself to the precise mechanical device, as described, for that may be modified or varied.

But I claim loosening or detaching the top sheet of a layer of papers from those underneath it, by giving a part of said sheet a backward and forward motion, as shown, previously to its being operated upon by the pressure rollers or other device for conveying it to the printing press or other machine, to which the sheet of paper is fed, for the purpose of ensuring the feed of only a single sheet of paper at a time, as set forth.

[This is a very ingenious apparatus for the purpose, and is noticed on page 148 of this Vol.]

FOLDING CHAIR BEDSTEAD—Geo. H. Cottam, of Hampton Road, Eng. Patented in England Oct. 5, 1852. I make no claim to the parts separately; nor do I confine myself to the details given, provided the peculiar character of my invention be retained.

I claim the mode described, of constructing folding sofa or bedstead chairs, viz,, of a combination of three frames and jointed arms, as applied and made to operate together, as specified.

WEDGE MACHINE—G. C. Jones, of Alnar, and Peter King, of Whitefield, Me.: We claim the peculiar form of the chisel having two or more projecting chisels at right angles to the face of the main chisel, and an appendage for pushing back the spring, as described.

Second, the application of the spring, and its projection, for the support of the wedge while being shaved, as described.

Third, the peculiar form and arrangement of the grooves for holding the blocks to be shaved and giving shape to the wedges while being shaved, as described.

OPERATING THE FEED-TABLES OF PRINTING PRESSES—George Little, of Utica, N. Y.: I claim the mode described, of operating the feed tables of printing presses, together with the guides composed of india rubber, or other suitable resisting material.

APPARATUS FOR FEEDING PAPER TO PRINTING PRESSES. Wm. Kuhlenshmidt & Wm. Hauff, of New York City: We claim, first, the employment of a semicircular roller, so constructed, arranged, and operated that it will, in its backward movement from the paper cylinder, loosen or detach the top sheet of a layer of paper from those underneath it, and then take hold of the back end of said sheet, and in its forward or return movement toward the paper cylinder, raise the said back end of the sheet, and gradually separate the whole surface of the same from contact with the one under it, and then feed it to fingers of the paper cylinder, as described.

Second, we claim taking up the sheet by its back end instead of by its front end, for the purpose set forth.

FIELD FENCE—D. R. Prindle, of East Bethany, N. Y.: I claim the method described, or its equivalent of fastening together the adjacent posts or standards of a field fence, that is, by passing a piece of metal having a head on one end through two adjacent posts, and securing the same by a wedge or its equivalent at the other end, the standards or posts being so beveled as to cause any desired angle to be made by any two adjacent panels.

GLASS FURNACES—Frederick Schaum, of Baltimore, Md.: I claim in glass furnaces making the external and internal configuration of the breast-work of the furnace wall with the re entering positions so as to partly embrace the pots and to furnish room for additional or extra teaze or ring holes, as described.

BRICK MAKING—J. C. Fr. Salomon, of Washington, D. C.: I claim the combination of the swing crane, mold-box and plat n, for pressing brick, arranged and operating together, as set forth,

FORMING AND HARDENING HAT BODIES—Albert Spencer, of New York City, and August Loeschner, of Brooklyn, N. Y.: We claim the use and arrangement of the series of blow pipes, as set forth, when used in combination with the two or more fan brushes and feeding apparatus, as set forth.

FORMING ROOFS—W. Sterling, of Bridgeport, Conn.: I do not claim the application of cements for roofs or plastering the same on boards or timber, the contraction and expansion of which causes the cement to crack. Neither do I claim the plastering of cement on lath.

But I claim the use of reticulated wire imbedded in cement, where cloth is used as a foundation, for the purpose set forth.

BULLET MOLDS—Wm. M. Storm, of New York City: I claim, first, a hand bullet mold, so constructed that it may be forced open against the adhesion of the lead, so as to deliver its ball by the pressing together of its handles by the strong grasp of a single hand, whereby are attached the important ends described

Second, in combination with a mold constructed as descibed, I claim the sheaves which are operated by the strong grasp of a single hand on the handles, or their equivalents, whereby the ball is deprived of its sprue and released from its matrix by the closing or compressing together of the handles.

MACHINE FOR CUTTING AND SKIVING BOOT COUNTERS—Varanes Snell, of North Bridgeport, Mass.: I claim arranging the knife at a proper angle in a traversing knife carriage which has a reciprocating motion in the arc of a circle for rounding the counter and chamfering its edges substantially as described.

I also claim holding the clamp upon the leather while the counter is being cut, and releasing it from the same after the operation is finished, by means of the traversing pawl, acting in combination with the lever, and notched plates, as set forth.

I also claim a machine for cutting and skiving boot and shoe counters which has a clamp for holding the leather while it is being cut, and for releasing it after the operation is performed, and a traversing knife which moves in the arc of a circle, and rounds and skives the counter at the same time, as set forth.

OILERS FOR MACHINERY.—De Witt C. Smiley, of New York City: I do not claim cans having flexible bottoms; but I claim the combination of the interior chamber with the can, having a flexible bottom, when said interior chamber has its bottom extended to fill the interior diameter of the can, and form a diaphragm dividing the can into an upper and lower chamber, said diaphragm provided with two valves, one opening upward and the other downward, arranged and operating in the manner described.

RAIL ROAD CAR SEATS.—W. B. Thomas, and Samuel Hickock, of Buffalo, N. Y.: We claim the combination of railroad car seats with hinged or pointed legs, constructed and operated as described,

SYRINGE EYE BATH.—Simeon Fowle, of Pembroke, N. Y., I disclaim the invention of bale, or of a cap, and of elastic cups for cupping.

I claim the combination of the ruined cap, connected tubularly with the ball, and arranged and operating as described, to be used for purposes named.

RE-ACTION WATER WHEEL.—Isaac True, of Rochester, Ind.: I claim the employment of the hooked surfaces and the curved projecting surfaces, in combination with the indented ring, substantially in the manner specified, in the construction of percussion and re-action water wheels, whereby the effective force of the percussion is greatly increased, as set forth.

INVALID BEDSTEAD.—C. D. Van Allen, of New York City. I claim the arrangement and combination of the elevating and depressing bed, with the stationary suspension mattress, whereby the bed is raised to and lowered from the patient, when necessary, instead of moving the patient thus avoiding the necessity of moving or disturbing the patient, as set forth.

GUARD FINGERS FOR HARVESTERS.—W. F. Ketchum, (Assignor to Rufus S. Howard) of Buffalo N. Y.: I claim molding and casting the blank for the tooth in the open form described, (without a chill) then mallifying dressing up and bending them into the proper shape as required.

DESIGNS.

DOOR AND PANEL OF COOKING STOVES.—M. C. Burleigh, of Great Falls, N. Y.

FRONTS OF CLOCK CASES.—William B. Lorton, of New York City.

AIR TIGHT STOVES.—Garrettson Smith and Henry Brown, of Philadelphia, Pa.

STOVE PLATES.—John Burgess, of Troy, N. Y.: assignor to Geer & Co., of same place.

RE-ISSUE.

FIRE AND BURGLAR PROOF SAFES.—F. C. Goffin, of New York City, (Assignor to A. B. Ely, of Boston, Mass.) Originally dated 14th Feby. 1854. I do not claim forming safes or doors with double casings. What I claim is the use of glass or slag in a vitrified state in the filling of safes or vault doors, either poured moulten into the spaces, or inserted in plates substantially, as described.

[One of the applications in the above list was made one year ago. Inventors' rights are grossly outraged by such delays, and we hope to have recorded in this list the last case of the kind. Judge Mason should see to it that cases are not suffered to linger so long in the office.

Scientific Memoranda.

CLEANING METAL CASTINGS—To cleanse metal castings, they are usually thrown into water acidulated by sulphuric or muriatic acid; but as some metal is removed and the surface left rough, the process is objectionable. Thomas and Delisse found by their experiments that if several organic substances were added to the acid water, the scale of dirt and oxyd was removed, but the surface of the material unattacked. Elsner found that tar added to the acid water completely cleansed an iron casting, while another piece of casting in the usual acid water was nearly dissolved.

ENAMELED IRON—After cleaning the surface to be enameled, the enamel is laid on as a paste and burned in under a muffle. F. Walton (Lond. Journ. Arts, 1847) uses three successive layers, which are as often heated in the muffle. The first coat is made by fritting 6 pts. pounded flint-glass, 3 pts. borax, 1 pt. red lead, and 1 pt. oxyd of tin. One part of this frit, mixed with 2 pts. calcined and ground bones, is ground fine with water, spread over the metallic surface as a thick paste, dried, and then heated to redness in the muffle. The second coat is made of 32 pts. calcined and ground bones, 16 pts. kaolin, 14 pts. Cornish granite, and 8 pts. potash in solution: the paste thus made is fritted for 2–3 hours in a furnace and then powdered. Of this frit 5½ pts. are mixed with 16 pts. coarsely-powdered flint-glass, 5½ pts. calcined and ground bones, and 3 pts. ignited and ground flints. The mixture is then ground with water, spread over the first coat and burned in. The third and last coat (which is similarly treated) consists of 12 pts. powdered feldspar, 4½ pts. kaolin, 18 pts. borax, 3 pts. saltpeter, 1½ pt. potash, and 1¼ pt. oxyd of tin.

SOLDERING SALT—(Chloride of zinc and ammonium).—Vessels may be tinned with this salt without previously cleansing their surfaces. It is made by dissolving 1 lb. zinc in muriatic acid, adding 22 pts. salammoniac to the solution, and evaporating to dryness; the yield is 2¼ lb. of the double salt. To use it, the salt, moistened with water is brushed on the surface to be tinned, a little solder laid on it here and there, and the surface heated until the solder fuses, when it flows wherever the salt was put, and unites with the metallic surface.

TINNING—According to Becquerel, well-cleansed vessels of iron and copper may be tinned by dipping them into a solution of the double salt of chloride of tin and sodium, at a heat of 160° assisted by contact with zinc.

SOLDERING WROUGHT AND CAST-IRON—Filings of soft cast-iron are melted with calcined borax, the mass pulverized and sprinkled on the parts to be united. They are then separately heated and welded together on an anvil by gentle blows.—[Journ. Fr. Inst.

WELDING POWDER—to melted borax, 1-10 salammoniac is added, the mixture poured on an iron plate, and an equal weight of quicklime ground up with it. Iron or steel to be welded is first heated to redness, the mixture laid on the welding surfaces, and the metal again heated, but far below the usual welding heat.—The pieces unite firmly by hammering.

Were the earth reduced to a plenum it would be no larger than an ounce weight.

Scientific Association.

The American Association for the Advancement of Science met in Washington, at the Smithsonian Institution, on the 26th inst. Prof. Dana, of Yale College, was introduced as the new President, by ex-President Pierce, and delivered a short and very appropriate address.—He said:—

"Gentlemen of the Association:—In taking this place with which you have honored me, permit me to allude briefly to one or two of the objects which have brought us together.

One great end, as proclaimed in the name of the Association, is the 'advancement of science,' which implies that we are not to delay sluggishly or ignorantly over old facts, but earnestly to gather in the new, that our 'facts' be not ephemeral, which the next passer-by will dissipate, but sure eternal facts, as enduring as adamant, that shall give solidity, increasing extent, and beauty, to the edifice of truth. Such facts are best welcome when least adorned, and disencumbered as nearly as may be of the rubbish of words. They reach their ultimate end when a clear insight into principles enables the philosopher to point out their exact place in the sublime system of nature, thereby to exalt our knowledge of its Divine author.

But there is another prominent object in view in this annual meeting. It is the cultivation of good feeling, kindly sentiments and sympathy among the lovers of science in the land; that with one aim before us—truth, and not self—as the end of every investigation, we may go forward harmoniously, rejoicing in each other's success, and glad for the new light we may each receive. This end alone accomplished, the meeting will have been abundantly profitable. But with success in both objects, we shall have occasion to remember long this gathering in Washington in 1854; and may such be the result."

[We will give abstracts of the useful papers read before the Association in future numbers.

Composition of the Sheathing of Ships.

M. Bobierre has paid considerable attention to this subject, and has arrived at the following conclusions as to the cause of the rapid destruction of some copper and bronze sheathing:—1. When unalloyed copper is employed, the presence of arsenic appears to hasten its destruction.—2. All bronzes which appear to have stood well, contained from 4½ to 5½ per cent. of tin, that quantity being necessary to form an homogenous alloy. When the percentage of tin is only 2·5 to 3·5, which is very frequently the case, no definite alloy is produced, and the mass is of unequal composition, and, being unequally acted upon, is soon destroyed.—3. When impure copper is employed the alloy is never homogenous, and is unequally acted upon in consequence. We thus see that the so frequent destruction of the sheathing of copper-bottomed vessels arises from the tendency to use inferior brittle copper, and by diminishing the proportion of tin, to economise the difference between the price of that metal and copper, at the same time that the cost of rolling is also less, in consequence of the greater softness of the poor alloy. Bobierre thinks that the addition of a very small portion of zinc very much improves the bronze, by producing a more perfect and uniform distribution of the positive metals, and consequently a much more definite alloy.—[Comptes Rendus.

Sand and Tar.

Experiments have proved that porous sand and other stones, when steeped for about 8 hours in hot coal tar, (160 Reaumur,) acquire a greater degree of hardness and become impermeable to water. Bricks require only 4 hours, and the coal-tar a temperature of 90 degrees Reaumur to become as hard as rock. The latter would answer best for sidewalks.

An Artificial Man.

The "Memorial Bordelais" states, that not far from St. Sever, France, there is living an old military man, who has a false leg and a false arm, both movable by means of springs, a glass eye, a complete set of false teeth, a nose of silver, covered with a substance perfectly resembling flesh, and a silver plate replacing part of the skull.

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New Inventions.

Improvement in Milling.

Geo. Mann, Jr., of Ottawa Ill., has applied for a patent for ventilating and removing moisture from meal as it comes from the stones before it enters the bolting cloths. All grain possesses considerable moisture; this is partially set free by the heat generated by friction in grinding, still it enters into the meal, and clogs the bolt cloths, preventing free bolting. The more work a mill has to perform, the evil increases in proportion, so that more of the meal is carried off with the bran in proportion to the increase of work in the mill, thus lessening the product of fine flower as the speed of the stones is increased. The object of this invention is to carry off the moisture from the meal after it leaves the stones, by passing it through a many-sided tapered agitator, and subjecting it, in its passage to the bolts, to a current of cold air. The meal thus treated bolts more freely and allows of a great deal more work being performed in a given time by any mill.

Taper Holes in Hubs.

Wm. I. Casselman, of Vernon, N. Y., has invented an improved machine for boring taper holes in hubs to receive axle boxes. The nature of the invention consists in having a cutter attached to one end of a lever, with a pin on the opposite end of it, said pin working in an irregular or oblique slot and an adjustable plate secured to a suitable bed. The fulcrum of the lever passes through a rod, which has a screw cut on a portion of it, and a nut working thereon. The rod and lever are operated by the nut mentioned, and a cutter on one end of the lever is made to pass through the hub in an oblique direction, cutting a taper hole by the motion which is given to it (the cutter) by the pin on the opposite end of the lever, working in the oblique slot in the adjustable plate mentioned. Measures have been taken to secure a patent.

Evaporating Brine, Cane-Juice, &c.

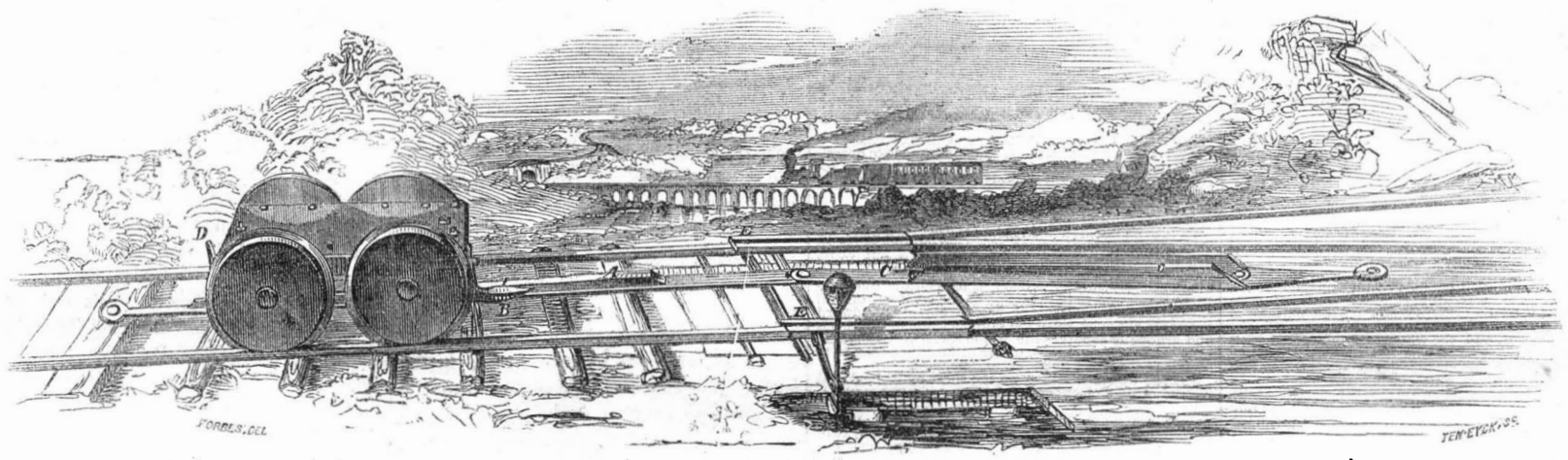
Andrew Thorndike, of the city of Boston, has made an improvement in Evaporators for evaporating cane-juice, brine, and other liquors. This invention consists in supplying the necessary heat for the evaporation of liquids and solutions and carrying off the evaporations therefrom, by means of hot air or steam, which is admitted and allowed to circulate over their surface in a covered vessel, and then through a jacket surrounding the vessel, imparting the heat necessary to produce evaporation by its contact with the surface of the liquid and with the sides and bottom of the vessel, and carrying off the evaporation thus produced by the draught which is caused by its tendency to escape to the atmosphere. Measures have been taken to secure a patent.

Ventilating Railroad Cars.

John Bevan, of Jersey City, N. J., has made an improvement in Ventilating Railroad Cars and excluding dust from them, for which he has applied for a patent. The nature of the invention consists in placing a fan blower on the top of the front car, and so arranging it that on each side of it, and on the same spindle, there are a series of revolving blades, which act centrifugally upon cinders, sparks, and dust, so as to throw them off and not permit their entrance at the central part of the blower. The blower or fan supplies the car or cars with air, and the blades spoken of act the part of a screen, to keep out impurities from the air which is supplied to the cars.

Dr. Simpson, of Edinburgh, it is said, is working wonders with consumptive patients, by having them well rubbed with warm olive oil. Some of the patients have increased 13 pounds in weight in seven or eight weeks.

SELF-ACTING RAILROAD SWITCH.---Fig. 1.



The annexed engravings are views of an improvement in Railroad Switches, for which a patent was granted to John F. Klein, of Trenton, N. J., on the 27th of April, 1852. Figure 1 is a perspective view, and figure 2 is a transverse section, showing a shifter connected to a truck, and a section of rail. The same letters refer to like parts. The object of this invention is to have a shipper or rudder on the engine connected to the truck, to be set by the engineer, to switch off the train upon any of the diverging tracks, the object of the invention being to set the track by the engineer, irrespective of the position of the switch to which the train is approaching. A common railroad truck is shown upon the track, on which is the peculiar switch employed, as shown in fig. 1. The switch is composed at one end of a central projecting vertical wedge rail, secured on an axis pin, and at the other end of a frog and center movable wedge rail, secured to an axis pin, also, so as to allow the switch to shift at the middle—move from side to side, to shift the track, according as the shipper is set on the truck by the engineer. Fig. 2 shows the truck. On its front end is secured the shipper, B, which is of a wedge shoe form and is bolted to a bar, *b*, which has a rack cut on its face, this bar is capable of sliding from side to side through guide eyes. There is a spindle or shaft extending along the truck from end to end under the wheel axles; it is supported on proper bearings, and is capable of describing about half a revolution. It has a sector, or semi-pinion keyed on its front, meshing into the rack, *j*, of the shipper bar. By moving the lever, D, to the right (fig. 2,) it is evident that the sector, *a*, would shift the shipper, B, to the other side of the projecting wedge-rail, A, if it was not in the position shown. This shipper therefore is set before the train arrives at the switch so as to take either side, right or left, of the wedge-rail, A, when it comes to it, as it is this wedge-rail which shifts the track.

C, fig. 1, are the central frog flanges of one end of the switch, *c* being a narrow movable central wedge-rail between the two frog flanges, A is a single wedge-rail on the other end of the switch. A weighted upright lever, connected in the usual way to the shifting track, is also shown.

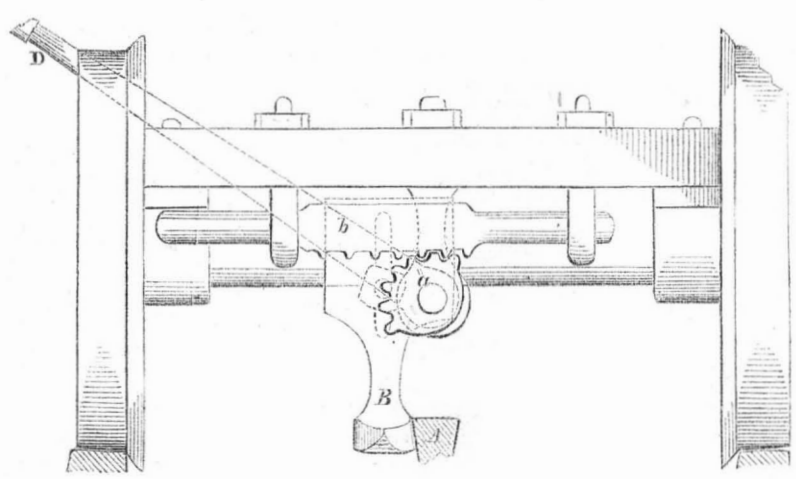
Supposing the shipper, B, to have been set before the train has come to the switch, so that it will run along and pass on the right hand side of the wedge-rail, A, as now shown in fig. 1; if the shifting part of the track—where the two converging lines meet at the joint, E had been so set previously that the off-rail at E, on the off-side of the switch had been on the inside, the action of B on H, like that of a wedge, will force the switch to cant the weighted lever over, and shift the rails, so as to place the outside off-rail out of the break at the joint, and allow the train to pass along on the inside off-rail and the outside nigh-rail, when running to the right.

If the train be running in the contrary direction, the shipper is set in the same way, but the central wedge-rail being set between the frog flanges, presses against them and shifts the switch in that manner, simply to obviate the necessity of a very broad base on the wedge-rail belonging to that part of the switch which embraces the two diverging tracks.—The shipper, B, is secured in such a manner that it is capable of vibrating, or rising upwards, so that if it should strike any obstacle on the road, or the edge of the wedge-rail, it will freely rise and do no injury. The following is the claim of the patentee:—

"I claim the bars or shifters, constructed, arranged, and connected to the switches of a railroad, in the manner and for the purpose as described, so that if the train run in either direction, and the rudder be placed in either position, as described, and if the switch or switches are not in a proper position, the rudder will act upon the shifters, and move them gradually, as the train approaches, so as to move and place the switches in such a position that the train may pass on unimpeded, without the risk of running off the track."

The rudder mentioned in the claim, we have called the shipper. Its office is certainly somewhat similar to that of a rudder. We have seen this invention applied on a working model, and can candidly state, that it operated well—accomplishing all that its inventor has claimed for it. More information about it may be obtained by letter addressed to Mr. Klein, No. 67 Warren st., Trenton, N. J.

Figure 2.



Steam Boilers.

William Kenyon, of Steubenville, Ohio, has taken measures to secure a patent for an improvement in Steam Boilers, which consists mainly in surrounding a vertical cylindrical boiler with a number of flues, which spirally surround it and form a communication between the fire chamber and the chimney. These flues are made in the brick-work setting which surrounds the boiler, and have the effect of increasing the length of the circuit of the heated products of combustion, thereby causing them to give out more heat to the water in the boiler, and at the same time consume more perfectly the elements of combustion.

Cream Freezers.

Thomas M. Powel, of the city of Baltimore, has invented a useful improvement in Cream Freezers. The apparatus has three cylindrical chambers, an outside and an inside one for the ice, with the one for the cream in the middle, so as to expose two cooling surfaces to the cream to be frozen. There is also a reticulated funnel-shaped agitator inside of the cream chamber, for the purpose of more perfect agitation, and for the removal of the cream as it is being frozen, thus allowing new unfrozen cream to be continually placed in direct contact with the cooling surfaces. Measures have been taken to secure a patent.

Nursing and Exercising Chairs for Children.

Joshua Stevens, of Chicopee Falls, Mass., has taken measures to secure a patent for Nursing and Exercising Chairs for children, the object of said chair being for children of from eight to eighteen months old to exercise themselves for pleasure and amusement, and it is so made that it can weigh the child.

Ship Borer.

The Salem (Mass.) "Register" says: "There was a vessel hauled on one of our railways, last week, which exhibited a curious specimen of the destructive nature of the Toredo, or ship-borer. The schooner 'Sarah Jane,' built in Marblehead only about two years ago, was laid up in some of the Beverly docks the succeeding winter, and in Salem during the last. The keel was made a complete honeycomb, and had to be entirely removed, as well as several of the planks. Some of the worms, several inches long, were found in the cavities which they had bored. There was scarcely a foot of the keel that would sustain its own weight.

A Buried Casting.

A curious discovery has been made in Paris within a short time. A colossal statue of Louis XVI. had been ordered from a celebrated sculptor, early in 1830, for the city of Bordeaux.—It was in the mold when the revolution of 1830 broke out, and it appears to have been forgotton, for it was only discovered a few days ago by some workmen who were clearing the site for some new building to be erected on the Quartier Beaujou, in Paris.

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Scientific American.

NEW YORK, MAY 6, 1854.

Scientific Imaginings.

Man is a speculative being. Like the ever-throbbing ocean, his mind "is all unrest." Pleased with his own imaginings, he becomes devotional towards them, though they may be as attenuated as the web of the gossamer, or baseless and incongruous as the dream of the idiot. The best and wisest of men have their day-dreams, for all mankind are subject to vanity. This is the reason why so many strange and shadowless theories have been propagated by the learned and the unlearned, in every age of the world's history, and why the present age is still prolific with fanciful hypotheses in literature and philosophy. Indeed, the present age is perhaps more speculative than any which has preceded it. Whenever a new phenomenon is observed, barrels of ink are consumed by crowds of philosophers rushing forward to explain it, each positive that he is right and all the others wrong. No sooner was the pendulum experiment of Foucault published to the world than numbers dashed forward to use it in explanation of other phenomena than the rotation of the earth on its axis, such as the cause of the Gulf Stream, the tides, &c. As there are various kinds of moving bodies in the universe—suns, planets, satellites, comets, and meteors, so there are various kinds of philosophers in the world; some are as steady, true, and bright as our sun, while others are as eccentric in their speculations as comets in their orbits. Like these latter in their course towards the sun, they gallop forward towards some great subject, with a vehemence that is truly alarming, when lo! all at once, they whisk round, "leaving truth untouched," and disappear perhaps forever.

The phenomena of light has engaged the attention of the greatest philosophers in every age, and it is still a subject involved in mystery. Even as late as Wednesday last week Dr. Hare, one of the oldest and most scientific men in our country, at the meeting of the American Association for the Advancement of Science, declared that a reform was needed in the whole doctrine of the undulatory theory. It was an ancient belief of the Chaldeans, that space was filled with a pure ethereal fluid; and Descartes applying this to explain the phenomena of light, devised the undulatory theory, which is comprised in the following short sentence:—"Light is the effect of the undulations of a subtle ether pervading space." It has not yet been fully proven that such an ether does exist, nevertheless there are philosophers who, to their own satisfaction, have from this very ether, demonstrated the cause of the sun's luminosity, and all the storms that take place on our planet. A book is now before us recently published by D. Appleton & Co., this city, the author of which is T. Bassnet, which sets forth a new theory of storms, founded on the supposition that space is pervaded with a subtle ether, which he asserts possesses inertia, but not gravity—an imponderable. According to his theory, this matter not having the quality of gravity or attraction—although his book is a considerable volume of 245 pages, and very well written—we have not been able to learn from it how such effects can be produced by such a material. A pamphlet by Daniel Vaughan, of Cincinnati, being an epitome of three lectures which he delivered in that city, and entitled, "Destiny of the Solar System," attempts to account for the luminosity of the sun, &c., by this same *subtle ether*. But while Bassnett divests his ether of gravity, calls this "the pivot on which his theory turns," and says, (page 22) "this medium is not affected by gravity," D. Vaughan, on the other hand, accounts for solar and stellar light by this self-same fluid *possessing gravity*. On page 4 he says, "In obedience to the law of gravity, this luciferous fluid accumulates about the earth and the celestial bodies, but it is only on the largest spheres that it receives a sufficient degree of compression to call forth its luminous properties." Thus it is that "Doctors do differ." We confess however, that we are somewhat pleased with this theory of solar light, as conveyed by its author in the following language: "While the sun's attraction collects this medium from space, and calls forth his effulgence, his rotation causes its continual influx to his poles, while it escapes at his equatorial regions, thus bringing fresh material to his surface. In this manner we may account for the perpetual brilliancy of the sun, and which, in contradiction to every known principle of chemistry, is capable of furnishing an unlimited amount of light without suffering any waste or any loss of its illuminating power." That is, solar light is produced by the powerful compression of a subtle ether, and no decomposition or change in its nature takes place in the production of the light. The reasoning of this philosopher, however, is not *a priori*, for as the sun's rays have calorific, chemical, and luminous qualities, he has no basis for asserting that by the simple compression of any matter whatever, all these phenomena can be produced without a change in the nature of that matter, and if a change occur then it upsets his whole theory. Mr. Vaughan has presented many very ingenious views on different subjects, but he is a very careless writer, as we see by an article of his in the "Great West," of the 22nd ult., (a paper published at Cincinnati.) It is on the composition of the rings of Saturn; it contains a number of incorrect statements, and is altogether unreliable. In that article he asserts that the "Scientific American" had put forth a theory of the tides, designed to supercede that of Newton—a statement as ridiculous and as far from the truth as some of his scientific speculations. Some may regret that ingenious-minded men so often mistake rhapsodies—imaginings—for correct scientific theories, but we do not. With Bacon, we believe that a false theory is better than no theory, for then it is open to examination, and sooner or later truth will be separated from error.

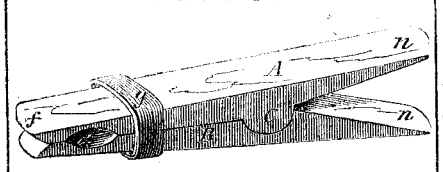
The "Ericsson" Sunk.

The Hot Air Ship "Ericsson," while making a short trip down the Bay on Thursday last, was struck by a squall, careened over and sunk, when moving opposite to the Glass House Dock, Jersey City. The day had been very calm and beautiful, and well suited for a favorable display. She must have drawn very little water, or she would not have been so easily laid upon her side while the water rushed through her starboard port, in such quantities as to sink her,—a vessel of 2200 tuns burden—in 48 feet of water at a distance of 300 feet from the shore. All that were on board escaped, among which were a number of invited guests—ladies and gentlemen. We greatly regret this accident, for as that had been heretofore said by us respecting this vessel, had been fully verified, and we were waiting with no small amount of impatience for the testing of her *new* hot-air engines, which we have also stated, in opposition to the views of many professedly scientific men would prove as great failures as the old ones, because the element—hot-air—is in its very nature so far inferior to steam, as a propelling agent. We sincerely hope, however, that this ship will be raised soon, (the damage cannot be much) and the "Ericsson," as has been so often promised for her, be permitted to make a voyage across the Atlantic. Some of our daily papers no doubt are greatly pleased at this accident, as it will leave them some room for saving their credit; it is different with us. We always wished success to Capt. Ericsson and the owners of this vessel, and could have sincerely prayed for the achievement sought, were we not convinced that this was impossible. What we have said about it was dictated by duty to ourselves and the community.

Means for Saving Life in Shipwrecks.

The late terrific shipwrecks on the Jersey shores, by which so many lost their lives, affords a severe commentary on the miserly means provided by our government for such exigencies. The ship "Powhattan," by which two hundred and fifty human beings perished, was so near the shore, in broad daylight, that the Captain could converse through his speaking trumpet with those on shore, and that before a single life was lost, but there was not a life-boat nor means of saving life at hand, nor within six miles of the wreck. This was disgraceful to our government. Much money is talked away in Congress every year, and a great deal more is voted away for useless puposes.—It would be more to the credit of the members of Congress from New York, if they attended more to the interests of their country, than to partisan squables. Commerce rules the world; a nation without Commerce, is a nation without strength and influence. The reason why the United States is looked upon now as being such a powerful Empire, is because she is a great Commercial nation. All that pertains to the safety of ships and their crews, tends to foster and encourage Commerce. In view of this fact, it is the bounden duty of our government to provide better means for the safety of life in cases of shipwreck, all along our coasts, especially around New York, which has now become the great shipping mart of the world.

Patent Clothes Pin.



This engraving is a perspective view of the clothes pin—with its jaws closed—for which a patent was granted to E. S. Haskins, of Boston, on the 14th of last March (1854). The common clothes pin in general use consists of two legs, united at the top to a short body, and is from its construction liable to fall from the clothes line to the ground, leaving the clothes to be blown down and soiled.

To remedy this inconvenience a pin was contrived, consisting of two pieces united together in the middle by a wire hinge. Between two contiguous ends of these pieces was placed a wire spring which forced them apart, and at the same time closed the opposite ends upon each other, which served as jaws to embrace the line. This formed a very effective clothes pin for a time, but it was found that the metallic spring was liable to be forced out of place, while the wire which formed the hinge being necessarily small was soon broken, when the two halves of the pin were thrown apart by the force of the spring which closed the jaws.

To avoid all these objections this improved clothes pin has been contrived, in which there is neither hinge nor metallic spring, the spring made use of to close the jaws being so applied as to hold the two halves of the spring at all times together.

A and B are the two halves of the clothes pin, the former having at its center the barrel or circular projection, C, which plays in the corresponding groove, D, of the piece, B; *e* are grooves in the jaw, *f*, for the purpose of receiving and holding the line when the clothes pin is used; *g* is a band of india rubber which is passed over the ends of the jaws and is received into notches made for the purpose. This band forms a strong spring for the purpose of closing the jaws. When used the ends, *n n*, are pressed together by the thumb and finger, and the pin is then placed upon the line, the band, *g*, closing the jaws and holding securely whatever is between them.

Amongst the advantages offered by this clothes pin over any other heretofore in use, may be enumerated, economy of construction, simplicity and durability; the india rubber itself being so placed as to hold the other parts securely together, while the spring in those heretofore constructed tended constantly to throw the parts asunder.

More information may be obtained by letter addressed to the patentee, No. 20 Broad street, Boston.

Cocoanuts, Tallow, and Lard.

We stated two weeks ago that by the war between England and Russia, a fine field was now opened for any spare tallow which our dealers in such stuff might have on hand. It seems that upon the certainty of such a field for extra soap grease, the price of that article in the market has gone up. It is not likely, however, that we will be able to fill up the deficit in the English field, although it is hard to tell what Americans can do in anything, when put to the test—whether it be in sailing yachts, picking locks, making reaping machines, or raising tallow. Lard is nearly as much employed for making fine soap as tallow or suet, but it would take 4,000,000 hogs to produce lard enough to supply the quantity of tallow which has been cut off this year from being exported by Russia. Our merchants, however, can find plenty of room for trading in the oil line, by carrying palm oil from Africa; and to us it appears that a new trade for our people may be opened for cocoanut oil. This oil is extensively used for soap making in Germany, but we believe that its use for such purposes is unknown among us. Being so near to the cocoanut countries, our countrymen have advantages for securing a trade in this oil, over Europeans. The riches of the valley of the Amazon, we hope, will soon be opened up to our people, and we are glad to see that Lieut. Maury is urging this question with that discreet enthusiasm for which he is signalized. What may be its capacities in the production of oil or tallow, we do not know, but we suppose they must be good. We therefore hope that the free navigation of this great valley will soon be opened to our countrymen.

The Deaf and Dumb.

A copy of the Report of the New York State Institution for the instruction of the deaf and dumb, for 1853, received from the President, Harvey P. Peet, L.L.D., has afforded us great satisfaction by the cheering account of its great and continued prosperity. There are now three hundred and twenty-two pupils in this Institution, 192 being beneficiaries of the State. We can testify personally to the astonishing power exercised in this institution in molding and elevating the character of its pupils.

White Straw Paper.

The "Dollar Newspaper" like the "Philadelphia Ledger," comes to us this week printed on paper made from straw, by Mellier's process which is advertised on another page, ("Scientific American.") This paper is really excellent and beautiful, It is much stronger than paper made from rags; it is firm and hard like linen paper, and is as white as any paper printed in the country. We are happy thus to herald the complete success of white printing paper made from straw.

Webster's Dictionary.

We understand that the fame of this great Dictionary, (published by Messrs. G. & C. Merriam, Springfield, Mass.,) has been employed in a very disreputable manner in London, by selling "Worcester's Dictionary" as Webster's. While this is anything but right, a higher compliment could not be paid to the merits of the latter work.

Sad Accident at a Fire.

A fire took place in Broadway, opposite the City Hall Park, on the night of Tuesday, the 25th ult., and while a number of firemen were in the lower story, a huge safe fell from an upper story, and a wall fell in, whereby ten were killed and a great number severely injured. This is the most serious accident which has ever befallen the firemen of this City.

New Steamboats.

New steamboats to the number of forty-three, are now in process of construction in the yards of Pittsburg and its vicinity, being, as we learn from the "Commercial Journal," a larger number than at any former period. Of the whole forty-three only three are side-wheeled. Of the stern-wheel boats, many are of large size, from 800 to 1000 tuns burden

Hemp.

This article is attracting considerable attention, not only in our own, but in all the Eastern and Western markets. Prices, too, are higher than they have been known for years, and still constantly going up. Yesterday we noticed sales of undressed in this market at $148 to $152, and hackled has sold as high as $205 per tun. The demand is chiefly, if not entirely, for export to the Ohio river and the Eastern cities. Several hundred bales were shipped for New York, via Wheeling and Pittsburg, at the rate of 50c. per 100 pounds freight.—[St. Louis Intelligencer.

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Per-centage of Tannin in Substances Used in the Arts.

The annexed article by Prof. Fehling, from the "Polytechnisches Central Blatt," (German) is of great interest to our tanners:—

Among the various substances which precipitate tannin from solution, such as gelatine, quinine, animal skin, &c., the latter has hitherto been recommended as the most appropriate for determining the percentage of tannin.—This method of valuation has been preferred, because it represents in miniature the operation to which the results refer. There are, however, no detailed directions for its application; and in repeated trials made by the author, under a variety of conditions, he has has found that the tannin is never perfectly precipitated, and that the solutions soon become moldy.—Experiments with solution of quinine, freshly precipitated oxyd of iron or alumina, did not give more satisfactory results. He then tried gelatine in solution; and instead of weighing the precipitate obtained, by adding an excess of gelatine, preferred adopting the volumetrical method, estimating the quantity of solution of gelatine of known centrigrade value required to precipitate the tannin. For this purpose it is indispensable that the precipitate should separate readily; but with most kinds of tannin this is not the case. The author has found it advantageous to use a dilute solution of gelatine, and to have the liquids quite cold.—His mode of operating is as follows:—

The solution gelatine is prepared by digesting 10 grms. of dry gelatine (containing about 18 or 19 per cent. of water) in water for twelve hours, and then applying heat until the solution is complete. The volume is then made up to 1 litre.

For the purpose of determining the centrigrade value of the gelatine solution, 0·2 grm. of pure tannic acid dried at 212° F., is dissolved in 100 or 120 grms. of water, and the gelatine solution added from a graduated burette until the precipitation is complete. Filtration is generally necessary towards the end of the operation, or as a substitute, the following plan may be adopted:—A narrow open glass tube is covered at one end with some tolerably thick linen bound tight by a cord; on immersing this covered end in the liquid, and sucking out the air by the mouth at the other end, a portion is rendered clear by passing through the linen, and may be poured into a tube, and tested with gelatine.

The author found that the 0·2 grm. of pure dry tannic acid required from 32·5 to 33 cub. centims. of the gelatine solution for perfect precipitation; when the gelatine solution is some days old, a larger quantity is necessary, 35, 38, or even 40 cub. centims. It is therefore necessary in all cases, when the gelatine solution has been kept any time, to determine its centrigrade value by means of tannic acid immediately before making any experiments with it.

If it is required to estimate the value of oak or other barks for tanning, they are first dried in a warm room, powdered finely, digested in quantities of 10 grms. with warm water, and exhausted by means of a displacement apparatus, constructed of a tube 2 feet long, 1 inch wide, and drawn out at the lower end, which is loosely stopped with cotton wool. Some substances may be introduced dry into this apparatus, and exhausted by warm or cold water.—The extraction may likewise be facilitated by the pressure of a column of water, applied by fitting a narrow glass tube with a cork into the upper end.

In most cases the extraction is completed in one or two days. When the operation is properly conducted, the quantity of liquid extract amounts to half a pound or a pound. It is then treated with gelatine solution so long as a precipitate is produced. A few drops of dilute hydrochloric acid facilitate the separation of the coagulum.

The quantity to be taken for an experiment of substances rich in tannin, such as galls, is about 0·5 or 1·0 grm. A simple calculation gives the percentage of tannin.

The author states that he has adopted this method in repeated examinations of tanning materials during the last ten years; he has found the results tolerably constant, and, notwithstanding its apparent imperfection, more trustworthy than any other yet known.

He estimates the relative value of several substances of this kind as follows:—

Pine bark contains from	5	to 7	per cent.	tannin.
Old oak bark contains	9		"	"
Best oak bark contains	19	to 21	"	"
Galls nuts contain	30	to 33	"	"
Aleppo galls contain	60	to 66	"	"
Chinese galls contain	70		"	"

These data at least admit of comparison with each other, and indicate with tolerable certainty the respective value of these substances to the tanner. This method of valuation is indeed based upon the assumption that the same kind of tannin exists in all these substances. It is, however, extremely probable that this is not the case; but, at the same time, it may fairly be assumed, that if different kinds of tannin combined under similar conditions with different quantities of gelatine, they will also combine animal skins in the same relative proportions. If, therefore, this method does not indicate the absolute percentage of tannin, it still gives the percentage value of the substance examined; and it is precisely this which the tanner requires.

It is another question, whether gelatine solution precipitates all the substances of the tanning material which combine with the skin; and it therefore remains to be determined by experience whether such a method of valuation is sufficient for the purpose of the tanner.

Clippers of the Lakes.

The writer of this has just finished a new schooner called the "Clipper City,"—named after this port—of 185 tuns government survey, which he has furnished with a scale of displacement, intended to illustrate the new tunnage law proposed by our leading architect, John W. Griffiths, of your city, and at the same time to demonstrate the absurdity of the old one in stupid operation at the present time. By this scale not only the displacement or weight of the vessel when ready for sea is shown at the proper draught of water, but every tun of cargo subsequently put on board is exhibited in tuns as the lading goes on, and as the immersion is increased in feet and inches. A vertical section of the sheer plan amidships, is shown on a scale of half an inch to the foot, exhibiting the rail, bulwarks, plank sheer and two strakes of wales, colored to correspond with the paint of the vessel. A vertical scale (in feet and inches) is disposed on this section of sheer plan, which indicates the correct hight of water-line at any given draught, and from which lines (dotted) are levelled out at every three inches to the sweep or curve of displacement, and from these dotted down to the scale of tuns below base line. With this scale in hand, and the accompanying calculations of stability, propulsion and elementary exponents of shape, it is supposed that a commercial man of intelligence could not mistake the qualities of marine fabrics.

Tunnage of this vessel by displacement,	121·50
Actual capacity at 7 feet draught,	160·50
Measurement by government rule,	185·30
With bottom of plk. shr. 11 inches free, will carry,	185·30

Exponent of load-line displacement, ·54 per cent. Very Respectfully,

WILLIAM W. BATES.

Manitoowoc, Wis.

Cashmere Goat in America.

The Editor of the "Farmer and Planter," says that the above named kind of goat has been introduced into the United States from Turkey, by Dr. Davis, of S. C.; it is of larger size than our common goat, is as easily kept, and by his experiment is proven to be admirably adapted to our climate. Its great excellence is, that instead of a coat of hair, it has a fleece of fine silky appearance from four to six inches long in one year's growth. It is from the fleece of this goat the celebrated Cashmere shawls from China are made. Besides its beautiful and silky appearance, textures made from the fleece of this goat outwear all known substances. Stocks made of it have been worn six winters without material injury. They can be shorn annually, and the average weight of each fleece is about four pounds, sometimes weighing as much as seven pounds, and the price is very high. We hope that more of these animals will soon be introduced into our country.

Deodorizing and Disinfecting Properties of Charcoal, &c.

The following is an interesting article, by J. Stenhouse F. R. S., in the "Journal of the Society of Arts," (London):—

The powerful effects of freshly-burned wood-charcoal, especially when coarsely powdered, in absorbing gases and vapors, have been long known. Hence the limited extent to which charcoal has been occasionally employed to sweeten fœted water and animal substances in the incipient stages of putrefaction. Sufficient attention has not, I think, however, been hitherto bestowed on a second and still more important effect which charcoal exerts upon those complex products of decomposition, viz. that of rapidly oxydizing them and resolving them into the simplest combinations they are capable of forming.

When coals or wood are burned with an inadequate supply of air, a variable amount of intermediate or secondary products is generated, constituting what are called soot and smoke; when, on the other hand, the combustion of the fuel is conducted with an adequate supply of oxygen and a sufficiently high temperature, carbonic acid, water, ammonia, with perhaps a little nitric acid, are almost the sole products.

The putrefaction of animal and vegetable substances is likewise in general a process of imperfect oxydation. Hence, under ordinary circumstances, when this is the case, a variety of more or less complex secondary products is formed, which usually possess very disagreeable odors, and exert exceedingly injurious effects upon the animal economy. To these substances the general name of *miasmata* has been given. Not much is known of their nature; but they are believed to be heavy, complex, nitrogenated vapors, which are decomposed by oxygen, chlorine, sulphurous acid, nitric acid, and other disinfecting agents.

My attention was particularly drawn to the importance of charcoal as a disinfecting agent by my friend John Turnbull, Esq., of Glasgow, the well-known extensive chemical manufacturer. Mr. Turnbull, about nine months ago, placed the bodies of two dogs in a wooden box, on a layer of charcoal-powder of a few inches in depth, and covered them over with a quantity of the same material. Though the box was quite open, and kept in this laboratory no effluvium was ever perceptible; and on examining the bodies of the animals at the end of six months, scarcely anything remained of them except their bones. Mr. Turnbull sent me a portion of the charcoal-powder which had been most closely in contact with the bodies of the dogs. I submitted it for examination to one of my pupils, Mr. Turner, who found it contained comparatively little ammonia, not a trace of sulphuretted hydrogen, but very appreciable quantities of nitric and sulphuric acids, with acid phosphate of lime.

Mr. Turner subsequently, about three months ago, buried two rats in about two inches of charcoal-powder, and a few days afterwards the body of a full-grown cat was similarly treated. Though the bodies of these animals are now in a highly putrid state, not the slightest odor is perceptible in the laboratory.

From this short statement of facts, the utility of charcoal-powder, as a means of preventing noxious effluvia from churchyards and from dead bodies in other situations, such as on board ship, is sufficiently evident. Covering a churchyard to the depth of from two to three inches with coarsely-powdered charcoal, would effectually prevent any putrid exhalations ever finding their way into the atmosphere. Charcoal-powder also greatly favors the rapid decomposition of the dead bodies with which it is in contact, so that in the course of six or eight months little is left except the bones.

In all the modern systems of chemistry, such, for instance, as the last edition of Turner's 'Elements,' charcoal is described as possessing antiseptic properties, while the very reverse is the fact. Common salt, nitre, corrosive sublimate, arsenious acid, alcohol, camphor, creosote, and most essential oils, are certainly antiseptic substances, and therefore retard the decay of animal and vegetable matters. Charcoal, on the contrary, as we have just seen, greatly facilitates the oxydation, and consequently the decomposition, of any organic substances with which it is in contact. It is, therefore, the very opposite of an antiseptic.

(For the Scientific American.)

Locks—Letter from Mr. Hobbs.

In your paper of the 25th of March, (received per last steamer) you state that "There can be no doubt of the fact that 'Day & Newell's American Lock,' under the care of Mr. Hobbs, now in London, has been successfully picked." I am most happy to inform you that both your own and the conclusions of the "Mechanics' Magazine" (which you copy,) are drawn without the slightest foundation in truth. Day & Newell's American Lock, since I have had it in my charge, has been operated upon by different parties 123 days, with the offer of 200 guineas as a reward, and the strong national feeling so often expressed, prompting them to pick it. But as yet the American Lock remains inviolate.

The recent excitement about lock picking was caused by Mr. Goater falsely stating that he had picked the American Lock, while in fact he simply picked some of my ordinary draw-locks, but that even was not done until after I had myself pointed out the defect in their construction, and in those of recent manufacture applied a remedy. The charge of tergiversion made by the "London Mechanics' Magazine" is fully explained by the fact that my remarks were made upon two different locks, while many are intentionally led to believe that the American lock and those made for ordinary purposes are the same. I enclose an official copy of the abstract of the remarks made at the Institution of Civil Engineers. The original paper together with a full report of the discussion will soon be published. I will then forward a copy to you. Yours,

A. C. HOBBS.

London, April 12th, 1854.

[We are very glad that Mr. Hobbs has written us this letter, as it sets the matter in the clearest light—the American lock is yet inviolate. We made a correction of the matter to which Mr. Hobbs refers in the succeeding number of the "Scientific American," which he had not received when the above letter was written. In the last number of the "London Mechanics' Magazine," it is stated that the workmen under Mr. Goater had presented him with a silver snuff box for picking Hobb's American Lock. This appeared significant to us; snuff clears the eyes and makes people sneeze.

Consumption of Sugar.

Last year there were consumed in this country about 705,000,000 pounds of cane sugar, and 27,000,000 pounds of maple sugar. This gives more than 24 pounds of cane sugar and 1 pound of maple sugar to every man, woman, and child. If this were put into barrels holding 200 lbs., and each barrel occupied the space of 3 square feet only, it would require 336 acres of land for it to stand upon. The barrels if placed in a row would reach 280 miles. If this sugar were put up in paper packages of 5 pounds each, it would require 146,400,000 sheets of wrapping paper; and if only a yard of string was used to each package, there would be required 439,200,000 feet, or 83,000 miles of string—more than three times enough to go round the earth. If every retail clerk sold 100 pounds of sugar each day, it would require nearly 25,000 clerks to sell it in a year. If the dealer, wholesale and retail together, made a profit of only two cents a pound on this sugar, these profits alone would amount to nearly $15,000,000.

New Line of Packets.

The Boston "Gazette" says Donald McKay, in connection with two or three other capitalists, is about building a new line of European packets, to be composed of eight ships of 2200 tuns each, the whole to be finished in two years.

Green, orange, violet, and white, are the complementary colors of red, yellow, blue, and black.

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TO CORRESPONDENTS.

R. F. H., of Ky.—Electricity passes through the wires of the telegraph, in a current. Their surfaces are covered with a non-conducting substance.

E. L., of Conn.—We do not know how to cover copper with iron.

H. K., of Ohio,—We have never seen coal gas carried in casks; but it can be made in any factory on a small scale with a proper apparatus. There is a very useful work on the subject by Parnell; it will give you the necessary information.

Y, W. H., of Cincinnati.—Your plan is patentable. but you must judge for yourself whether it will be prof itable; we cannot tell.

E. S., of La.—It would not do any harm to have the gauge surrounded with another tube, but we do not see its necessity. The regularity of the gauge is an evidence of its correctness. The steam is applied from below in some gauges for high pressure boilers, by acting upon air to compress it, and thus act upon the mercury. The gauge acts by pressure.

L. S., of Pa—You had better write to the parties who advertise, about the price of the engine and boilers.—Your work requires considerable power, that you must look to the quantity as well as anything else. The more work you wish done in a given time, the greateris the power required. We prefer the upright saw for your hard work; and were it for ourselves, we would have a 20 horse power engine.

P. W., of Conn.—We believe what you say about having suggested the making of bills of different sizes of paper, but we said as much on the subject as we prudently can for the present.

J. P., of Boston.—The flat paddle is the best; of this there can be no doubt.

J B., of Texas.—Window blinds have been operated in the manner stated in your letter, and the same device could be very easily applied to a door. We do not think it patentable.

W. S., Jr., of N. Y.—It is no consequence whether you hold the letters patent of the inventors, so long as you are the exclusive assignee—you can obtain duplicates at the office if you so desire, at the usual price of copying.

Money received on account of Patent Office business for the week ending Saturday, April 29:—

G. W. & Co. N. Y., $55; J. G., Senr., of Ind., $20; J. D. B., of Ohio, $25; C. D., of Ohio, $30; B. F., of Ind., $10; J. F., of N. Y. $30; N. W., of Conn., $30; J. U., of O., $25; G. B. S., of N. Y., $10; C. W. D., of N. J., $30; R. W. G., of N. Y., $55; F. & W., of N. Y., $20; J. S., of Mass., $25; J. S. W., of Iowa, $30; L. F. H., of Vt., $30; H. M., of N.Y., $300; McP. & B., of Mass., $55; C. A., of N. J., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 29:—

Mc. P. & B., of Mass.; A. H. C., of N. Y., (2 cases); J. D. B., of Ohio: C. A., of N. J.; J. U., of C.; J. S., of Mass.; G. F. W., of Pa.; S. & B., of Ct.; J. G., Senr., of Ind.; M. M., C., of Ct.

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

A MECHANICAL ENGINEER—offers his services as Engineer and Draughtsman in a Foundry and Machine Shop, references will be given; inquire at this this Office. 34 2*

FOR SALE—By the Baltimore and Ohio Railroad Co., 24 Crate Cars, adapted to railroad purposes, which will be sold at a reasonable price. For further information apply to SAMUEL J. HAYES, M. of M., Baltimore and Ohio R. R. Co., or BRIDGES & BRO., 48 Fulton st., New York. 34 tf.

GRIFFITH'S PATENT VALVE COCKS for Steam Engines, dyeing establishments, or Chemical Works, They are warranted superior to any valve or cock in use. They are easily repaired without taking them from the pipes, they are made any size from 3-8 in. up to 7 1-2 in., either screwed or with flanges. Responsible agents for the sale of these valves wanted in New York. Boston, Pittsburg, and all the principal cities in the Union. The rights to manufacture in the different States for sale. Parties interested will address J. GRIFFITHS, City Tube Works and Brass Foundry, 15 North 7th street, Philadelphia. 34 8*

FULTON FOUNDRY AND MACHINE WORKS S. W. corner of Green and Morgan streets, Jersey City, N. J. The subscribers are prepared to contract for Sugar Mills and Mining Machinery of every description. Horizontal Steam Engines of various sizes constantly on hand. All orders executed with promptness. 34 13* FIELDS, BROTHER & CO.

DR. LITTLE'S AUTOMATIC LIGHTNING PRESS will be publicly shown in New York shortly. The cylinders of this press can be made to feed itself at the rate of 100.000 sheets each per hour. 34 2*

KETCHUM'S MOWING MACHINE—Also various Reaping & Mowing Machines, combining all the latest improvements. New York Agricultural Warehouse and Seed Store, 189 and 191 Water street. 34 2* R. L. ALLEN.

STAVE AND BARREL MACHINERY—HUTCHINSON'S PATENT.—This machinery, which received the highest award at the Crystal Palace, may be seen there in operation during the ensuing season. Cutting, Jointing and Crozing Staves and Turning Heads. Staves prepared by this process are worth to the cooper from 20 to 40 per cent more than when finished in another way. Applicable alike to thick and thin staves. Apply to C. B. HUTCHINSON & CO., Auburn, N. Y., or at the Crystal Palace. 27tf

KRUPP'S BEST CAST STEEL—Suitable for Mint and Plater's Rollers, also of large size (72x18 inches diam.) for rolling iron, copper or brass. Pistons of Steam Engines, and Shafts for Steamboats, not exceeding six tuns weight in one piece. Also the celebrated Cast Steel Axles and Tire, made from a solid bar without welding. Agents, THOS. PROSSER & SON, 33tf 28 Platt st, New York.

ENGINEERING—The undersigned is prepared to furnish plans for ever description of machinery, water wheels, turbines, and to consult with parties to make experiments and scientific investigations, and to superintend the construction of works. Agent for Mellier's Patent for making White Paper from Straw.

VICTOR BEAUMONT,
33 10* Consulting Engineer, 74 Broadway, N.Y.

TO YOUNG MEN.—Pleasant and Profitable Employment.—Young Men in every neighborhood may obtain healthful, pleasant, and profitable employment, by engaging in the sale of useful and popular Books, and canvassing for our valuable Journals. For terms and particulars, address, post-paid, FOWLERS AND WELLS, No. 308 Broadway, New York.

P. S.—All Agents who engage with us will be secured from the possibility of loss, while the profits derived will be very liberal. 33 4

AGRICULTURAL MACHINERY.—PARTNER WANTED—The advertiser wishes to join with one or more business men practically acquainted with the necessary branches, to establish a manufactory of agricultural machinery in the West. It would be necessary that each partner should furnish his proportion of capital. Address A, U. C., Blood's Despatch, Philadelphia, Pa. 32 3*

SEWING MACHINE—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

THE CRESCENT FOUNDRY & MACHINE CO. Bridgeport, Conn., make to order Stationary Steam Engines from 8 to 150 horse power, large double acting Force Pumps for water works, Iron Planers, Engine Lathes built in the most substantial manner and UNCOMMONLY HEAVY. Machinery in general and all kinds of Steam Boilers. Ha ing a large and extensive stock of mill gearing and other patterns, the accumulation of 18 years, they are prepared to furnish castings at short notice. Any work ordered from this Company will be guaranteed equal to any made in this country. They would call attention to a large lathe which they build, designed for Railroad Machine shops for turning of drivers. They also make a very large and heavy lathe with screw fe ed, designed for Machine Shops in general. They are now making a vertical Engine of new design from 8 to 10 horse power, which will require but the small space of 4 feet square (the bed being 24 by 34 inches) and with a vertical boiler will require only 4 feet by 8 feet. 18 12 1am*

CLOCK'S FOR CHURCHES, COURT HOUSES, &c.—Regulators for Astronomical purposes, Jewellers; also Time Pieces for Session Rooms, Railroad Stations, Offices, &c., which for accuracy of time and durability have proved (it is believed) equal to any made in Europe or this country. Glass Dials for illumination, and other kinds furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, N. Y. 10eowtf

SHINGLE MACHINES—Wood's patented improvement in Shingle Machines, is unquestionably the best ever offered to the public. The undersigned is now at the West, offering rights in this machine for sale. It is a rare opportunity for a safe and profitable investment in a machine without a rival, for the purpose to which it is applied. Parties wishing to correspond with me can do so by addressing J. D. JOHNSON,
21tf Bridgeport, Ct.

MATHEMATICAL AND OPTICAL INSTRUMENTS—The subscriber begs leave to bring to the notice of the professional community his new and extensive assortment of the above Instruments, which he partly imported direct from the most celebrated makers in Europe, and partly had manufactured under his own personal supervision. The undersigned would particularly invite attention to his very large and complete assortment of the justly celebrated Swiss Mathematical Drawing Instruments, for the sale of which, in this country, he has the sole agency, and which he can furnish at from $5 to $200 per case. Those Drawing Instruments received the prize medal at the London and New York Exhibitions. Orders fro n any part of the Union promptly executed, and price list sent if required.

C. T. AMSLER,
21 6eow* 224 Chestnut st, Philadelphia, Pa.

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid. 27tfeow

PASSAIC WORKS—Passaic street, Newark, N.J.—Manufacture and have on hand, Steam Engines of the most approved construction and various sizes. Also Machinists Tools of all kinds; Lathes, Planing Machines, Drills, &c., machine for Enameling Carriage Cloth, and Machinery of every description. Jobbing Work promptly attended to. Address GEO. WATTS, Passaic Works, Newark, N. J. 32 4eow*

MECHANIC'S FAIR—In Portland, Me., September, 1854. The Maine Charitable Mechanics Association will hold a Fair and Exhibition for Premiums, in Portland, Maine, commencing on the 19th day of September next, and invite contributions from every industrial profession. Choice specimens of ingenuity and skill—unique and valuable domestic productions, natural and artificial—the delicate and beautiful handiwork of females—labor saving machines, implements of husbandry, new models of machinery and, indeed, articles from every department of manufacture, which it would be impracticable to particularize in this advertisement, Medals and Diplomas will be awarded to owners or manufacturers of articles deemed worthy of that distinction. Steam Power will be provided, to show any model or machinery in operation to the best advantage. Further information is communicated in the Circular issued by the Association, which may be obtained at this office, or by addressing J. R. MILLIKEN.
30 3eow* Cor. Secretary.

1854. WOODWORTH'S PATENT PLANING, Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 18eowtf

IRON FOUNDERS' MATERIALS. viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by

G. O. ROBERTSON,
13 13eow 135 Water street, corner of Pine.

UNITED STATES PATENT OFFICE,
Washington, April 15, 1854.

ON THE PTITION of Fones McCarthy, of Putnam County, Florida, praying for the extension of a patent granted to him on the 3rd of July, 1840, for an improvement in the Cotton Gin, for seven years from the expiration of said patent, which takes place on the 3rd day of July, 1854,

It is ordered that the said petition be heard at the Patent Office on Monday, the 26th of June next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing. All testimony filed by either party, to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 16th of June; depositions and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the argument, if any, within ten days therea ter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y.; Floridian and Journal, Tallahassee, Fla., once a week for three successive weeks previous to the 26th day of June next, the day of hearing. S. T. SHUGERT,
Acting Commissioner of Patents.

P. S—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 34 3

UNITED STATES PATENT OFFICE.
Washington, April 17. 1854

ON THE PETTITION of Simon Fairman, of Stafford, Connecticut, praying for the extension of a patent granted to him on the 18th day of July, 1840, for an improvement in "the expanding and contracting, or universal chuck for lathes," for seven years from the expiration of said patent, which takes place on the 18th day of July, eighteen hundred and fifty-four, (1854)—

It is ordered that the said petition be heard at the Patent Office on Monday, the 25th of June next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 15th of June: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y., and Post, Boston, Massachusetts once a week for three successive weeks previous to the 25th day of June next, the day of hearing.

S. T. SHUGERT,
Acting Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 33 3

HARRISON'S PATENT MILLS—Received the highest premium at the World's Fair; 250 have been sold in two years. The stones are French burr; the frames and hoppers cast-iron. the spindles solid cast steel. They will work better for flouring, and on all kinds of grain and dry substances, and keep in repair longer than any other mill in the world. I have completed my new steam mills for manufacturing and running them, and am now prepared to supply orders for all the sizes, from 20 inches to 4 feet diameter, including also a superior farm and Plantation Mills at a fair price. Agents wanted to sell them in all parts of the country. Descriptive circulars, with cuts, mailed to all post-paid applications. EDWARD HARRISON,
Sole manufacturer and proprietor of the patent, New Haven, Conn. 30 7*

1854—MICHIGAN CENTRAL R. R. LINE,—D. W. WHITING, Freight Agent for Railroad and the enormous new steamers "Plymouth Rock," "Western World," and "May Flower,"—and also General Forwarder, will forward freight of any kind, by any mode of conveyance, to any dest nation, with dispatch and at the lowest rates; has trucks and machinery and (having been a pr ctical machinist has all the skill necessary) for the safe and expeditious handling of any machine or heavy article, such as Locomotives, Steam Engines and Boilers, Engine Lathes, Church Bells, Safes, &c. Mark packages care "D. W. Whiting, Buffalo;" goods thus consigned take precedence with the above boats in all cases. 32tf

$100 REWARD—To the Manufacturers of Bank Note Paper. The Executive Committee of the Association of Banks for the Suppression of Counterfeiting, hereby offer a reward of One Hundred Dollars for the best specimen, in the opinion of the Committee, of Bank Note Paper, of not less than five hundred sheets, which may be submitted to them on or before the 1st day of January next. All paper submitted, except that selected by the Committee, to be returned to the persons submitting the same.

J. M. GORDON, Secretary.
Boston, Mass., March 31, 1854. 31 15*

KETCHUM'S IMPROVED MOWING MACHINE with entire change of Gear. The only successful grass cutter now known; warranted capable of cutting and spreading from ten to fifteen acres of any kind of grass, per day, in as good a manner as is done with a scythe. Orders filled at our establishment in Buffalo, N.Y., or at J. MAYHER & CO.'S, and R.L. ALLEN'S, Water street, N. Y. HOWARD & CO.,
31 8 Proprietors.

MODELS—Of all kinds made and warranted to answer the requisitions of the Patent Office. Post-paid communications strictly confidential. Address J. G. ARNOLD, Worcester, Mass. 31 10*

ROBERTSON'S—Recently patented Keyed Stop Finger Board, for the Violin, can be examined and attached to old or new violins at the manufactory, 181 Broadway, N. Y. 31 4*

PORTABLE FORGES AND BELLOWS—(Queen's patent). The best forge in market for Blacksmiths work, Boiler Makers, Mining, Quarrying, Shipping, plantations, Contractors on Railroads and Public Works, Coppersmiths, Gas Fitters, &c., Also an improved Portable Melting Furnace for Jewellers, Dentists, Chemists, &c., both of which are constructed with sliding doors to protect the fire from wind and rain when used outdoors, and for perfect safety and free escape of smoke when used indoors. They are compact for Shipping. Circulars with particlars and prices will be forwarded upon application. Cast iron Columns, for building constantly on hand. Jobbing, Piano, and all kind of work promply executed. FREDERICK P. FLAGLER,
29 10* Sole Manufacturer, 210 Water street, N. Y.

MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

STAVE MACHINERY.—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn, For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

NEW HAVEN MANUFACTURING COMPANY—New Haven, Conn., (successors to Scranton & Parshley) have on hand Power Planers, to plane from 3 to 12 feet; slide lathes from 6 to 18 feet long; 3 sizes of hand lathes, with and without shears; and counter shafts: universal chucks; drill presses, index plates, bolt cutters, and slide rests. The N. H. M. Company also have the right for Harrison's patent Flour and Grist Mill for the term of five years, and are prepared to furnish these superior mills at short notice. They are unequalled by any other mill, and will grind from 20 to 30 bushels per hour, and will run without heating, being self-cooling. They weigh about 1400 lbs., are of the best French burr stone, 30 inches in diameter; are snugly packed in a cast-iron frame, price of mill $200, packing $5. For cuts, prices, and further particulars apply post-paid, as above, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 22tf

PORTABLE STEAM ENGINES—GEORGE VAIL & CO., Speedwell Iron Works, Morristown, N. J., LOGAN VAIL & CO., No. 9 Gold st, N. Y., are prepared to furnish Portable Steam Engines from four to eight horse power, with locomotive boilers. These engines are recommended for their simplicity, durability, and economy, being made from the best materials and designed for practical use. They are placed on wheels convenient to be moved from place to place, and are shipped in working order: for plantation use, machinists, or others wanting small power, these engines will be found superior to any others in use. A Silver Medal was awarded at the late Fair of the American Institute, and a premium in cash of $100 at the Maryland State Fair, held at Baltimore in October last. Persons writing us by mail will be particular to give their address in full. 21 38*

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 19tf

SCREW CUTTING MACHINES. with P. W. Gates' Patent Dies—The subscribers keep constantly on hand three sizes of the above-named machines, to wit—No. 1 machine, 10 sets dies and taps from one-half to two inches, $350: No. 2, 8 sets dies and taps, one-half to one and a half inches, $250; No. 3, 6 sets dies and taps, three-eighths to one inch, $150. Cash on delivery at shop. P. W. GATES & CO.
Chicago, Ill. 27 13

HUDSON MACHINE WORKS and Iron Foundry—at Hudson City, N. Y., are prepared to contract for castings for railroads, bridges, buildings, gas pipes and posts, water pipe, cast-iron ornamental floors, cannon, &c. Steam engines and boilers, high and low pressure, sugar mills, Cornish lifting and forcing pumps for mines; stamps, mortars, and mining machinery;—also superior hydraulic pumps and presses, and superior machinists' tools made to order. Especial attention given to the making of patent machines. Orders by mail will receive prompt attention. New York Office No. 18 Exchange Place.

FREDERIC COOK & CO.
F. COOK, H. McCLELLAND. 27tf

MACHINERY FOR SALE—The following machines are for sale at the "Scientific American" Office:—Alcott's Concentric Lathe, price $25.
Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

WHITE STRAW PAPER—For Newspapers.—A Mellier, the patentee, having established his process at Nixon & Xeinour's Mills, Manayunk, where the paper for the Philadelphia Ledger has been made daily from straw since the 12th of April, is now ready to sell licenses and make arrangements for establishing the process elsewhere. Apply to A. MELLIER & V. BEAUMONT, 74 Broadway, where specimens of half stuff, stuff and paper may be seen. 33 10*

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steam hips, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.

CHARLES W. COPELAND,
20 tf Consulting Engineer, 64 Broadway.

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 20 horse, $1,037: they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
31tf 12 Platt st, New York.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16 1y*

WROUGHT IRON DIRECT FROM THE Ore—The owners of James Renton's Patent are now prepared to sell rights for this most valuable invention. Apply to JAMES RENTON, Cleveland, Ohio, or to A. H. BROWN, 107 Market st., Newark, N. J. 27 10*

BAKER'S IMPROVED BOILER FURNACE—As used at the Crystal Palace: orders received for Stationary, Marine, or Locomotive Furnaces on this plan, and also for the rights for towns, counties, or States: certificates can be shown of furnaces in use for stationary, marine, and locomotive furnaces, with saving from 30 to 50 per cent. in fuel. J. AMORY,
25tf General Agent, 28 State st, Boston, Mass.

McALLISTER & BROTHER.—Opticians and dealers in mathematical and optical instruments, No. 48 Chesnut st., Philadelphia, Pa.—at the old stand established in 1796 by John McAllister, Senr. Mathematical instruments separate and in cases, Tape Measures, Spectacles, Spy Glasses, Microscopes, Thermometers, Salometers, Hydrometers, Magic Lanterns, &c., &c. Our illustrated and priced catalogue are furnished on application, and will be sent by mail free of charge. 10 25*

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
41 1y.* THOMAS, CORSON & WEST.

© 1854 SCIENTIFIC AMERICAN, INC

Scientific Museum.

(For the Scientific American.)
Dendrology.

There are many professed naturalists who can give a name to every tree as it stands in the forest, and yet cannot distinguish one from the other when cut into timber; and there are nearly as many mechanics who are excellent judges of timber, but are unable to tell one tree from another. A few words on the prominent characteristics of the most common woods may not, therefore, be inappropriate.

Ash.—Leaves about a foot long, often made up of 7 leaflets. Flowers, paniculate, appearing in May. Wood is light, durable, tough, elastic, permanent, splitting with a straight grain. Grows in United States and Canada.

Bass.—Leaves, cordate, 4 by 3. Flowers, cymose, appearing in June. Wood is fine grained, light, soft, white, clear, and flexible. Grows in Northern and Middle States.

Beech.—Leaves, alternate, lanceolate, 4 by 2. Nuts, ovoid-triangular. Bark, smooth, light gray. Wood, fine grained, red duramen, white alburnum. Buds in May. Abounds in New England, and Western States and Canada.

Birch.—Leaves, alternate, ovate, serrate, 3 by 2. Buds in April and May. Bark, laminated. Wood firm, compact, takes good polish. Abounds in Eastern and Middle States.

Butternut.—Leaves alternate, pinnate, formed of 7 or 8 pairs of leaflets. Buds in April and May. Branches horizontal. Wood reddish and light. Abounds in Eastern, Middle and Western States. Its kindred black walnut is rarely found north of New York. Its heartwood is heavy, tenacious, and violet colored, but turns black.

Cedar.—Leaves evergreen, imbricate, squamose. Flowers in May. Wood soft, smooth, light, durable, aromatic. Abounds in swamps of Middle States.

Cherry.—Leaves oval-oblong, shining above, 4 by 2. Flowers in May and June. Bark rough, black, and bitter. Wood colored, compact, fine grained.

Chesnut.—Leaves oblong-lanceolate, with teeth 7 by 2. Flowers in July. Wood coarse, porous, strong, elastic, light, durable, apt to warp.

Elm.—Leaves ovate, serrate, short stalked, 4 to 5 long. Flowers purple, in clusters, appearing in April before leaving. Wood tough, hard to split. Abounds in the Northern States.

Hemlock.—Leaves evergreen, linear, in rows. Cones appear in May. Branches brittle. Wood soft, elastic, coarse. Abounds in Northern States and Canada.

Hickory.—Leaves oblong-lanceolate, on long stalks. Flowers in April and May. Bark shaggy. Wood elastic, compact, heavy, tenacious, warps.

Maple.—Leaves 5-lobed. Flowers suspended, appearing in April. Bark light gray, scaly. Wood strong, compact, smooth. *Soft Maple* bears yellowish green flowers.

Oak.—Leaves lobed. Flowers in May.—Bark white. Wood strong, durable, coarse grained, warps. Abounds in United States and Canada. Red oak leaves are sinuate-lobed, wood reddish. Black oak bark deeply furrowed.

Pine.—Leaves evergreen, acerose in pairs. Flowers in May. Bark smooth. Wood soft, fine grained, durable, resinous, light, homogenous.

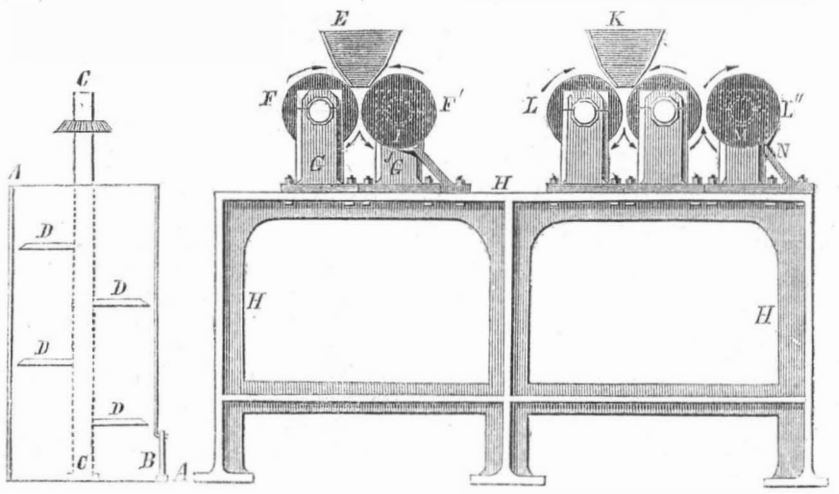
Spruce.—Leaves four-cornered, evergreen, straight, half an inch long. Flowers in May. Wood light, elastic, strong. Abounds in Northern States.

Closely connected with the botanical qualities of these trees are their hygrometric properties. The power of absorbing moisture generally varies as the porosity. To show the extent of the meteorological changes and the corresponding expansion and contraction of bodies, a simple method is to cut a thin slip of wood across the grain, and insert into its corners four needles pointing backwards. When set on a table it will crawl along and thus register the sum of damp and dry weather. The one I have, though kept in a close room, travels more than half an inch per week. In order to ascertain the relative absorbing powers of different woods, I procured similar slips of the spruce, oak, elm, pine, cherry, chesnut, ash, hemlock, bass, and butternut, which when baked were exactly eight inches in length. These being fastened at one end, each showed its avidity for atmospheric vapor by stretching longitudinally.—Their comparative increase is seen in the order just given; spruce gaining a quarter of an inch over butternut. By this hygrometer it may be proved that the amount of moisture in the air increases from sunrise till 9 A. M.; decreases till 4 P. M., and again increases till 9 P. M.

J. O.

ZINC PAINT MILL.

Figure 1. **Figure 2.** **Figure 3.**



Our readers are aware that peroxyd of zinc, generally called "white oxyd of zinc," is now much used as a pigment in competition with, and by many in preference to white lead; this article, of a very superior quality, is imported in large quantities into the United States by "La Societe des Mines de Zinc de la Vieille Montagne," of France and Belgium. The agent of that company has communicated to us the description of a process for mixing the oxyd of zinc with oil, used in one of the first paint manufacturing establishments of Paris, which, it is asserted, combines speed, efficiency, and economy. We give it herewith for the benefit of all concerned.

Figure 1 is the mixing mill; A is a hollow cylinder made of sheet iron, 31 inches deep, and 15 inches in diameter; it is set upright. B is a door closing hermetically when shut. C is an axle revolving vertically in the cylinder, A. D D D D are cross-blades fastened to the axle at a right angle and at equal distances.

Fig. 2 is the roughing mill. E is a hopper or funnel; F F' are cylinders made of cast-iron, 40 long inches and 8 in diameter. G G are bearings screwed down to the cast-iron table and frames, H. I is a circular iron plate fastened to, and edging both ends of cylinder F'. J is a thin elastic blade or scraper pressing against the whole length of said cylinder.

Figure 3 is the finishing mill. L L' L'' are cylinders similar to F F', but set closer and supported on the same frame. M is a circular edging placed similar to I, and set at both ends of cylinder, L'' N is a scraper.

By the use of this apparatus 100 pounds of the 'vieille montagne' zinc require only 12 to 15 pounds of purified linseed oil, while inferior descriptions of zinc ground in common burr stone mills require from 20 to 30 per cent. One half of the oil is first poured in the mill, A, and then the oxyd; the mill is set in motion at the rate of 30 revolutions of the axle per minute, and after a short time the remainder of the oil is added by degrees. When the substances appear to be well embodied together and the *paste* to be homogenous, the door, B, is opened and the contents allowed to be driven out by their own weight and the effect of the rotating motion, and are carried into the funnel, E, between the cylinders of fig. 2.

The cylinders, F F', make 30 revolutions per minute, and in proportion as the paint goes through them and falls behind the blade, J, on the table, H, it is taken up and poured into the funnel, K.

The rolling cylinders, L L', have the same motions as F F'; cylinder L'' makes 60 revolutions per minute; all these cylinders move in the various directions marked by the arrows.

The apparatus must be contrived so that the proximity of the rollers may be increased or decreased, according to what may seem best. It might be an improvement to it if the three mills were on three different levels, in order to avoid the labor of ladling the paint from the one to the other.

As described, it occupies a space of about 36 feet superficially, and can grind 2600 pounds of paint per day with a power of less than two horses; its first cost in Paris is about $800.

The zinc paint mixed by this process is perfect in body; it contains no grit or clots, and has a creamy appearance, which is well appreciated by painters.

Any further information which may be desired can be obtained by addressing F. Millirroux, 33 Broadway, New York.

Bronze Colors.

Bronze Colors from Brazil and Logwood, Suitable for Paper Strainers—If some alum be dissolved in a hot decoction of Brazil wood, which has been previously allowed to clear itself by standing some days, a precipitate will form on the liquor cooling, which will gradually increase if it be set aside, and will contain nearly the whole coloring matter. If this precipitate be once washed with water, and rubbed thick on paper, it will dry with a beautiful brilliant golden color, tending somwhat to green, resembling the wing-cases of dried Spanish flies. If a little of this precipitate, in the condition of paste, be mixed with size and some satining materials (formed of wax dissolved in soap), and then rubbed with a brush upon paper, it may be polished with an agate, or glass ball, upon which it will assume the beautiful yellow metallic lustre, very similar to bronze. To obtain this effect, it must be laid on so thick as to be perfectly opaque.

Similarly, a bronze color may be made from logwood; but the preparation is different, and the color is more like that of copper, whilst the former approaches to brass. If a fresh prepared decoction of logwood be heated in a copper pan, then precipitated with chloride of tin (tin salt), a rich dark brown precipitate will be obtained. This precipitate washed and treated as the last, communicates to paper a copper bronze. A different shade may be obtained by adding to the hot decoction of logwood a little alum, and then decomposing it with a still smaller quantity of red chromate of potash. This precipitate is darker, tending more to yellow than the latter.

Paper from Wood.

At the last sitting of the Societe d'Encouragement pourl'Industrie Nationale, of Paris, a paper was read setting forth a plan for making paper from wood. The bark is taken off the wood, and the wood cut in such away as to be easily made into shavings; the shavings are then cut very thin; next they are placed in water for six or eight days, then dried; afterwards they are reduced to the finest powder possible by means of a corn mill. This powder is then mixed with the rags which serve to prepare the pulp of paper, and the ordinary operation of paper-making is proceeded to. All white woods, such as the poplar, the lime, and the willow, are suitable for the purpose, but the discoverer ascribes a good deal of his success to the quality of the water he employed, that of the little river Dollar, which runs near the Mulhouse. For the first experiment he employed the wood of the trembling poplar, and he presented specimens of paper from it.

A Grain Fleet.

The "Chicago Journal" of Wednesday week, records the departure of quite a fleet of vessels from that port, all loaded with grain, for Buffalo and Oswego. The fleet numbered nineteen vessels, (three barks, six brigs, and ten schooners,) having on board 260,120 bushels, of which 208,332 bushels were of corn, 32,939 bushels of wheat, and the balance barley and oats. Of the whole quantity over 213,000 bushels went to Buffalo.

LITERARY NOTICES.

Autobiography of Hugh Miller.—This is quite a large volume just published by Gould & Lincoln, of Boston; being an autobiography named "My Schools and Schoolmasters," by the author of "The Old Red Sandstone," "Foot-prints of the Creator," &c. It is an interesting volume; the principal design of the author in writing it is to show his method of self-cultivation. It is adorned with a fine steel engraving of the author as a working mason, with his sleeves rolled up and his mallet in his hand. Hugh Miller presents one of the strongest examples of a working man—comparatively poor—without friends to help him, rising to the very front ranks of science and literature, both as an author of books and a journalist, he being the editor of the "Edinburgh Witness." This work is very interesting, and written with the author's usual ability.

Geology of the Creation.—The above publishers have also just issued in neat pamphlet form "The two Records, the Mosaic and Geological," by Hugh Miller. This is a lecture delivered by the author before the London Young Men's Christian Association. It should be read by all young men.

The Biblical Repertory and Princeton Review.—This learned and able Review for this quarter, of the Presbyterian Church, (O. S.) contains seven profound and well written original articles on various subjects. It is conducted by Prof. Hodge, of Princeton, and published at 265 Chesnut street, Philadelphia. To regular subscribers its price is $3 per annum, but it is furnished to theological students for $2.25, not one of whom in our country should be without it.

Spiritual Manifestations Examined and Explained.—This is a neat volume by John Bovee Dodds, and published by Dewitt & Davenport, this city. It is written to refute Judge Edmonds, and others who have written on the supernatural side of the question. We do not profess to be able to pass any judgment on what are called "spiritual manifestations." We know nothing of them personally, but have heard of much nonsense being transacted by such agency.

Blackwood's Magazine.—The April number of this old magazine, re-published by Leonard Scott & Co., No. 79 Fulton st, this city, is as usual rich and racy. It contains an able article on the commercial results of a war with Russia, and the continuation of the thrilling tale, "The Quiet Heart."

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